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OFFICE OF THE SECRETARY OF DEFENSE

DIRECTOR, OPERATIONAL TEST AND EVALUATION

APPROPRIATION: OPERATIONAL TEST AND EVALUATION, DEFENSE (0460)

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Exhibit R-1, RDT&E Programs

Department of Defense

OPERATIONAL TEST AND EVALUATION, DEFENSE APPROPRIATION (0460)

Date: February 2005
TOA, \$ in Millions

R-1 Line Item No	Program Element Number	Item	Budget Activity	FY 2004 Cost	FY 2005 Cost	FY 2006 Cost	FY 2007 Cost
1	0603941D8Z [U]	Test & Evaluation Science & Technology*	3	12.640	14.665		
		Advanced Technology Development		12.640	14.665		
2	0604940D8Z [U]	Central Test and Evaluation Investment Program*	6	136.332	133.831		
3	0605118D8Z [U]	Operational Test and Evaluation	6	37.675	43.192	43.928	47.577
4	0605131D8Z [U]	Live Fire Testing	6	11.721	11.110	10.340	10.487
5	0605804D8Z [U]	Development Test and Evaluation	6	103.712	107.701	114.190	116.672
		RDT&E Management Support		289.440	295.834	168.458	174.736
Total	Operational Test & Evaluation, Defense			302.080	310.499	168.458	174.736

*The National Defense Authorization Act of 2003 directed the establishment of the Defense Test Resource Management Center (DTRMC). The Act also requires the DTRMC to administer the Central Test and Evaluation Investment Program (CTEIP) and the Test and Evaluation/Science and Technology (T&E/S&T) program effective Fiscal Year 2006. Beginning with FY 2006, program elements 0603941D8Z (T&E/S&T) and 0604940D8Z (CTEIP) are transferred from the Operational Test and Evaluation, Defense (OT&E, D) appropriation (0460) to the Defense-wide RDT&E (0400) appropriation.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2)				February 2005				
OPERATIONAL TEST AND EVALUATION, DEFENSE (0460) BUDGET ACTIVITY THREE				TEST AND EVALUATION/SCIENCE AND TECHNOLOGY (T&E/S&T) PROGRAM ELEMENT (PE) 0603941D8Z				
\$ in Millions	FY 2004	FY 2005	FY 2006*	FY 2007*	FY 2008*	FY 2009*	FY 2010*	FY 2011*
PE 0603941D	12.640	14.665						
Hypersonic Test	2.830	3.003						
Spectrum Efficient Technology	1.980	2.036						
Multi-Spectral Test	2.318	2.760						
Embedded Instrumentation	2.746	2.354						
Directed Energy Test	2.676	3.271						
Information Systems Technology Test	0.090	1.141						
Software Test	0.000	0.050						
Modeling and Simulation	0.000	0.050						

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***The National Defense Authorization Act of 2003 directed the establishment of the Defense Test Resource Management Center (DTRMC). The Act also requires the DTRMC to administer the Central Test and Evaluation Investment Program (CTEIP) and the Test and Evaluation/Science and Technology (T&E/S&T) program effective Fiscal Year 2006.**

Beginning with FY 2006, program elements 0603941D8Z (T&E/S&T) and 0604940D8Z (CTEIP) are transferred from the Operational Test and Evaluation, Defense appropriation (0460) to the Defense-wide RDT&E (0400) appropriation.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION

The T&E/S&T program seeks out and develops test technologies to pace evolving weapons technology. This program is critical to ensuring that the Department of Defense (DoD) has the capability to adequately test the advanced systems that will be fielded in the future. To meet this objective, the T&E/S&T program:

- Exploits new technologies and processes to meet important T&E requirements.
- Expedites the transition of new technologies from the laboratory environment to the T&E community.
- Leverages commercial equipment and networking innovations to support T&E.

Additionally, the program examines emerging test requirements derived from transformation initiatives to identify needed technology areas and develop a long-range roadmap for technology insertion. This program leverages and employs applicable 6.2 applied research from the highly-developed technology base in the DoD laboratories and test centers, industry, and academia to accelerate the development of new test capabilities. This PE also funds travel to carry out oversight of the T&E/S&T program.

This Research Category 6.3, Advanced Technology Development PE, develops and demonstrates high payoff technologies for current and future DoD test capabilities.

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B. (U) PROGRAM CHANGE SUMMARY

(\$ in Millions)	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
FY 2005 President's Budget	12.804	16.295		
FY 2006 President's Budget	12.640	14.665		
Total Adjustments	(.164)	(1.630)		
Congressional program reductions		(1.630)		
Congressional rescissions				
Congressional increases				
Fiscal guidance adjustment				
Inflation adjustment				
Reprogramming	(.164) ¹			

Notes:

1. Reprogramming from PE 0603941D to PE 0604940D.

C. (U) OTHER PROGRAM FUNDING NA

D. (U) ACQUISITION STRATEGY NA

E. (U) PERFORMANCE METRICS

Percentage of T&E/S&T projects progressing satisfactorily toward technical, financial, schedule, and risk mitigation goals.

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RDT&E PROJECT JUSTIFICATION SHEET (R-2a)				February 2005				
OPERATIONAL TEST AND EVALUATION, DEFENSE (0460) BUDGET ACTIVITY THREE, PE 0603941D				HYPERSONIC TEST				
\$ in Millions	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Hypersonic Test	2.830	3.003						

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION

The National Aerospace Initiative (NAI) will develop air-breathing weapons, advanced aircraft, and access to space platforms to operate in the hypersonic speed regimes Mach 5 and higher. Hypersonic systems to be developed under the NAI require T&E capabilities in numerous areas ranging from ground testing (wind tunnels, sled tracks, installed-system test facilities, and modeling and simulation (including computational fluid dynamics)) through flight testing. At hypersonic speeds, flight testing will challenge existing ground instrumentation systems (e.g., tracking system slew rate limitations, telemetry dropouts due to ionization) and range safety decision making. Hypersonic weapon systems will depend on several new technological thrusts in areas such as propulsion and engines, structures and materials, guidance and control, seekers and sensors, warheads and payloads, and weapons delivery techniques and end-game dynamics - each requiring supporting T&E capabilities to determine performance, effectiveness, suitability, survivability, and responsiveness to Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) systems. Service improvement and modernization programs are addressing some basic test facility upgrades using off-the-shelf technologies. However, T&E of hypersonic systems will require technologies not yet developed or available for T&E purposes. The Department must have adequate T&E capabilities in place in time to meet current development, and ultimately, acquisition program schedules. The purpose of this T&E/S&T focus area is to address these T&E technology issues.

B. (U) ACCOMPLISHMENTS/PLANNED PROGRAM

	FY 2004	FY 2005	FY 2006	FY 2007
Hypersonic Test	2.830	3.003		

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FY 2004 Accomplishments:

Investigations initiated in FY 2002 and FY 2003 continued. Highlights for these projects included:

- Hypersonic Aeropropulsion System Flight Trajectory T&E successfully transitioned the flat flame isobutane burner part of this project to the Aerodynamic and Propulsion Test Unit (APTU) facility at Arnold Engineering Development Center (AEDC). The variable Mach number part of this project was selected for transition to a Central Test and Evaluation Investment Program (CTEIP) project. This will allow system developers and testers to perform realistic “fly the mission” testing instead of the current single Mach number testing performed in existing ground test facilities.
- Hypersonic Wind Tunnel Nozzle Survivability for T&E continued development on advanced alloys to fabricate nozzle throats that will allow testing up to Mach 12 flight conditions.
- In-Situ Pressure Measurements for Hypersonic Vehicles completed initial testing of high temperature Microelectromechanical System (MEMS) pressure sensing devices. These sensors will allow for improved accuracy pressure measurements during flight and ground testing.
- Heat Flux Sensor Development for Aerothermal Measurements developed miniaturized heat flux sensor assemblies to support wind tunnel and flight testing. These sensors will be tested to verify their improved accuracy and survivability in high heat flux environments. The prototype sensors were used to support National Aeronautics and Space Administration (NASA) shuttle “return to flight” testing.
- Advanced Flight Vehicle Instrumentation completed research into distributed optical data systems for hypersonic vehicle testing. These optical sensors provide the ability to monitor hypersonic ignition status and measure combustor pressure. These sensors were used on ground test of the HyFly combustor.

New efforts into Scramjet/Ramjet Sled Test Capability and Test Media Effects were initiated in FY 2004.

FY 2005 Accomplishments:

Efforts initiated in prior fiscal years continued. These efforts included:

- Hypersonic Aeropropulsion System Flight Trajectory T&E completed risk reduction efforts to optimize the variable Mach testing technologies for transition to the CTEIP “fly the mission” effort in the APTU at AEDC.
- Heat Flux Sensor Development for Aerothermal Measurements completed investigations into survivable, high temperature heat flux measurement sensors that can be embedded in hypersonic vehicles for ground and flight testing.

Projects identified by the FY 2005 Broad Agency Announcement (BAA) process were initiated. Efforts were planned in the following areas:

- Sensors and algorithms necessary to measure and evaluate combustion by-products to evaluate hypersonic engine performance during flight tests.
- Survivable sensors to measure shear stress and aeropropulsion-related heat flux for hypersonic systems.

A BAA was initiated in FY 2005 to select efforts for FY 2006 award.

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FY 2006 Plans: NA

FY 2007 Plans: NA

C. (U) OTHER PROGRAM FUNDING NA

D. (U) ACQUISITION STRATEGY NA

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OPERATIONAL TEST AND EVALUATION, DEFENSE (0460) BUDGET ACTIVITY THREE, PE 0603941D				SPECTRUM EFFICIENT TECHNOLOGY				
\$ in Millions	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Spectrum Efficient Technology	1.980	2.036						

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION

Increased commercial use of the radio frequency (RF) spectrum and DoD's higher demands for bandwidth and test data are impacting the capability to test current weapon systems. Realistic testing of modern military systems, and follow-on training at the completion of a defense system's development phase, rely heavily on the use of the RF spectrum, especially in the "L" and "S" microwave bands. Signal propagation, supportable data rates, and other related characteristics make these bands ideally suited for test telemetry and training applications. However, these are the same characteristics that make these bands highly coveted by the wireless communications industry. The growth in the demand for consumer communication services has resulted in reallocation of RF spectrum from government to non-government use. The reallocation of this spectrum, coupled with the increase in activities that use it, has raised concerns regarding the availability of adequate spectrum to support testing and training. Each new generation of military system typically generates ten times more data and information than the system it is replacing, resulting in a 20-year trend of exceptional growth in the demand for test and training related spectrum. The next generation of systems will generate proportionately greater data rates that will exceed the capability of our current test infrastructure. Technological advances in the spectrum efficiency focus area are required to ensure that programs will not have to compromise T&E by reducing the number or quality of tests.

B. (U) ACCOMPLISHMENTS/PLANNED PROGRAM

	FY 2004	FY 2005	FY 2006	FY 2007
Spectrum Efficient Technology	1.980	2.036		

FY 2004 Accomplishments:

Investigations initiated in FY 2002 and FY 2003 continued. Highlights for these projects included:

- Spectrally Efficient High Data Rate Telemetry System for Super High Frequency (SHF) fabricated a functional end-to-end brassboard to characterize the performance of Advanced Orthogonal Frequency Division Multiplexing (AOFDM). Analysis

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indicates that the AOFDM will provide improved telemetry capabilities up to Mach 40.

- Steerable Beam, Directional Antenna Concepts completed open-loop and closed-loop laboratory demonstrations of a breadboard steerable beam antenna system that can potentially minimize the effects of nulls in telemetry signals during flight testing.
- Super High Frequency (SHF) Channel Modeling and Implementation conducted flight tests to characterize interference that exists in the 8 GHz and 14 GHz frequencies. The results from this effort will support the next World Radio Conference.
- Space Time Coding for Aeronautical Telemetry conducted a flight test of the Alamouti space time code algorithm which is aimed at improving spectrum efficient operations. The test provided data critical to the development of the final space time code algorithm and receiver design. This effort was selected for transition to an FY 2005 CTEIP project.

New efforts into Optical Communications, X-Band Tracking, and Combined Coding Modulation initiated in FY 2004.

FY 2005 Accomplishments:

Efforts initiated in prior fiscal years continued. These efforts included:

- Spectrally Efficient High Data Rate Telemetry System for SHF completed flight demonstrations of a brassboard AOFDM transmitter and receiver with increased throughput to provide robust telemetry in the SHF band.
- SHF Channel Modeling and Implementation completed development of the channel model characterizing interference in the SHF bands. This model will allow development of advanced modulation techniques to mitigate SHF interference and support plans for T&E telemetry in the SHF band.
- X-band Tracking completed a feasibility demonstration showing the ability to modify existing telemetry assets to support operation in the SHF band. This demonstration included X-band telemetry tracking of a rocket launch.
- Optical Communications completed efforts to identify technology developments required to apply optical communications to telemetry applications. These results will be available to initiate development projects to build and demonstrate a brassboard optical communications system if warranted.

Although no new efforts started in FY 2005, a Program Research & Development Announcement (PRDA) was initiated to select efforts for FY 2006 award.

FY 2006 Plans: NA

FY 2007 Plans: NA

C. (U) **OTHER PROGRAM FUNDING** NA

D. (U) **ACQUISITION STRATEGY** NA

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OPERATIONAL TEST AND EVALUATION, DEFENSE (0460) BUDGET ACTIVITY THREE, PE 0603941D				MULTI-SPECTRAL TEST				
\$ in Millions	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Multi-Spectral Test	2.318	2.760						

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION

DoD S&T programs are developing new technologies for use in multi-spectral and hyperspectral sensors, seekers, and detectors for weapon systems and intelligence, surveillance, and reconnaissance systems. T&E of new multi-spectral and hyperspectral sensors to be used in these future weapon systems will require new T&E technologies. Current methods for testing multi-spectral and hyperspectral sensors rely heavily on expensive field test programs. While these field tests provide realistic data for sensor testing, they leave several critical gaps. For example, test conditions are not repeatable because environments observed one day will be different the next day. Imagery can be collected and stored to partially mitigate this deficiency, but this process is expensive and cannot cover the full spectrum of environments required for complete test article evaluation and performance analysis. The T&E community needs the ability to test these advanced seekers and sensors in a repeatable, objective fashion before and after integrating them into warfighting systems. This T&E/S&T focus area is addressing these needs through research efforts in scene generation, injection, and projection to create test technologies that can be combined into integrated multi-spectral and hyperspectral test capabilities. Without these new T&E technologies, DoD will not be able to adequately test and evaluate the multi-spectral and hyperspectral weapon systems of the future.

B. (U) ACCOMPLISHMENTS/PLANNED PROGRAM

	FY 2004	FY 2005	FY 2006	FY 2007
Multi-Spectral Test	2.318	2.760		

FY 2004 Accomplishments:

Investigations initiated in FY 2002 and FY 2003 continued. Highlights for these projects included:

- Dynamic Hyperspectral Thermal Signature Model completed a proof-of-principle demonstration of infrared (IR) signature generation. The signature model will be an open-source, high-fidelity, multi-spectral, and hyperspectral vehicle/background

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signature model capable of providing T&E support for multi-mode and hyperspectral seekers and sensors in the laboratory and field environments.

- The breadboard Hyperspectral Testbed Design demonstrated projection capability with three operational Long Wave Infrared (LWIR) Hyperspectral sensors. Design work began on a prototype testbed that will allow repeatable, closed-loop T&E of hyperspectral imagers for advanced weapons system applications.
- Multi-Spectral Stimulator Injection Test Method completed a non-real time, closed-loop demonstration of the breadboard system. Design work began on a prototype, real-time stimulator to allow registered, synchronous, and correlated testing of multi-spectral sensor systems and data fusion algorithms.
- Hyperspectral Sensor Evaluation – Minimum Resolvable Temperature (MRT) completed initial modification to the MRT simulation to incorporate candidate methods for determining key performance characteristics of undersampled focal plane arrays (FPAs). Current means of FPA testing cause aliasing in the perceived image which results in erroneous predictions of operational performance.

FY 2005 Accomplishments:

Efforts initiated in prior fiscal years continued. These efforts included:

- Dynamic Hyperspectral Thermal Signature Model released the first version of the signature model for test. The initial release included two-way interactions between targets and 3-dimensional terrain, vegetation, and cultural background objects to allow generation of high fidelity LWIR scenes for multi-spectral and hyperspectral sensor evaluation.
- Hyperspectral Testbed Design completed the Technical Design Review (TDR) for the prototype LWIR system. The TDR included a detailed design review of the primary subsystems: the Thermal Pixel Array (TPA), Digital Micro-mirror Device (DMD), and the reverse spectrometer.
- Multi-Spectral Stimulator Injection Test Method completed upgrades to support higher bandwidth data acquisition and generation of real-time RF clutter.
- Hyperspectral Sensor Evaluation – Minimum Resolvable Temperature (MRT) completed efforts to identify a test methodology for evaluation of undersampled imagers. The recommended test methodology will be submitted for consideration as a standard test method throughout DoD and the North Atlantic Treaty Organization (NATO).

Although no new efforts started in FY 2005, a Broad Agency Announcement (BAA) was initiated for FY 2006 awards.

FY 2006 Plans: NA

FY 2007 Plans: NA

C. (U) OTHER PROGRAM FUNDING NA

D. (U) ACQUISITION STRATEGY NA

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RDT&E PROJECT JUSTIFICATION SHEET (R-2a)				February 2005				
OPERATIONAL TEST AND EVALUATION, DEFENSE (0460) BUDGET ACTIVITY THREE, PE 0603941D				EMBEDDED INSTRUMENTATION				
\$ in Millions	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Embedded Instrumentation	2.746	2.354						

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION

Instrumentation requirements for systems-under-test, hardware-in-the-loop testing, and training are increasing exponentially for new weapon systems. Onboard or personnel-borne instrumentation and equipment are required for sensing and collecting critical performance data; determining accurate time, space, position, and attitude information; interfacing with command and control data links; monitoring and reporting system-wide communications; reporting human operator performance; and storing and transmitting data. These requirements drive the need for enabling technologies for miniaturized, non-intrusive instrumentation suites with increased survivability in harsh environments.

There is minimal space available for adding instrumentation to new weapon systems subsequent to their development. Additional weight and power draw can adversely affect the weapon system's signature and performance. Instrumentation for humans-in-the-loop, such as a dismounted soldier, should not detrimentally affect the soldier's performance or operational burden. New technologies can be exploited to integrate small non-intrusive embedded instrumentation (EI) into new platforms during design and development, and, in some cases, into existing platforms. This EI can provide the required data for T&E, training, and logistics throughout the system's lifecycle, and provide the ability to collect critical system performance data during combat missions.

The use of embedded instrumentation for T&E, training, and logistics has the potential for significantly reducing the total ownership costs of new weapon systems while enhancing force readiness. Accordingly, the Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 3170.01D states that acquisition programs should include embedded instrumentation as part of system trade-off studies and design analyses. The EI focus area will advance technologies needed to facilitate compliance with CJCSI 3170.01D.

B. (U) ACCOMPLISHMENTS/PLANNED PROGRAM

	FY 2004	FY 2005	FY 2006	FY 2007
Embedded Instrumentation	2.746	2.354		

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FY 2004 Accomplishments:

Investigations initiated in FY 2003 continued. Highlights for these projects included:

- Direct Methanol Fuel Cell (DMFC) completed a laboratory demonstration of the brassboard system. The DMFC technology has been selected by the Army Research Lab as the basis of a power system to support T&E of advanced weapon systems such as the Future Combat System by replacing heavy, high maintenance batteries with lighter weight, longer duration fuel cells.
- Carbon Monoxide (CO) Emissions Sensor for Gas Turbine Engines designed and fabricated prototype Microelectromechanical Systems (MEMS) CO sensors for use in the T&E of air breathing engines.
- Advanced Munitions Flight Test Instrumentation completed shock testing of packaged integrated circuits. This testing demonstrated the ability of the packaged electronics to survive the extreme shock environments of munitions testing.

New efforts into Gas Turbine Engine Probe, D-Fiber Optic Sensor, and MEMS Fiber Optic Sensors were initiated in FY 2004. A Broad Agency Announcement (BAA) was initiated in FY 2004 to select efforts for FY 2005 award.

FY 2005 Accomplishments:

Efforts initiated in prior fiscal years continued. These efforts included:

- Compact Holographic Data Storage completed the fabrication and test of a compact, high-density storage device that can be embedded in Systems Under Test (SUTs) for storage of test data. The holographic storage device has no moving parts and will be capable of storing a minimum of 500 gigabytes of data.
- Gas Turbine Engine Probe project completed design and fabrication of a gas extraction probe capable of being embedded within a combustor and used with the CO Emissions Sensor for Gas Turbine Engines.
- D-fiber Optic Sensor completed the fabrication and demonstration of multi-axis stress and temperature sensors etched onto D-fiber. These sensors will provide a low-cost technique for embedding sensors on systems during development.
- MEMS Fiber Optic Sensors completed the design, fabrication, and demonstration of optical pressure, temperature, and shear stress sensors. These sensors will be embedded on a test article to demonstrate practical application in an operationally relevant environment.

Projects identified by the FY 2005 BAA were initiated. Efforts were planned in the following areas:

- Distributed EI architectures that can support T&E on multiple types of weapon systems.
- MEMS and optical sensor systems for use in EI applications.

A BAA was initiated in FY 2005 to select efforts for FY 2006 award.

FY 2006 Plans: NA

FY 2007 Plans: NA

C. (U) **OTHER PROGRAM FUNDING** NA

D. (U) **ACQUISITION STRATEGY** NA

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RDT&E PROJECT JUSTIFICATION SHEET (R-2a)				February 2005				
OPERATIONAL TEST AND EVALUATION, DEFENSE (0460) BUDGET ACTIVITY THREE, PE 0603941D				DIRECTED ENERGY TEST				
\$ in Millions	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Directed Energy Test	2.676	3.271						

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION

Directed Energy (DE) technologies are rapidly transitioning into acquisition programs and Advanced Concept Technology Demonstrations (ACTDs). These weapons technologies, which primarily consist of High Energy Laser (HEL) and High Power Microwaves (HPM), are outpacing their supporting test technologies. Advancements in HEL and HPM have created a new class of weapon systems in which energy is placed on a target instantaneously, making traditional test techniques for evaluating conventional munitions (with flight times ranging from seconds to minutes) not applicable to DE systems' T&E. As a result, new technology solutions are needed to ensure adequate developmental, live fire, and operational test capabilities are available when the DE acquisition programs are ready to test.

DE system and component testing requires two principal assessments: how well the weapon is performing and the specific interaction of energy and target. The current ability to assess DE systems performance and interactions is based on effects testing, i.e., determining if and when the target was destroyed. This does not provide the detailed test data required to understand DE system performance. Military utility of these weapons will be dependent on the knowledge acquired through T&E to know how much to trust the technologies under development and how best to use them. This T&E/S&T focus area is developing the needed technologies to quantitatively assess both HEL and HPM performance and target interaction to support thorough testing of DE systems.

B. (U) ACCOMPLISHMENTS/PLANNED PROGRAM

	FY 2004	FY 2005	FY 2006	FY 2007
Directed Energy Test	2.676	3.271		

FY 2004 Accomplishments:

DE Test projects initiated in FY 2003 continued development through FY 2004. Highlights of these efforts included:

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- The Beam Redistribution System (BRS) began assembly of five individual HEL mirrors that will support studies into optical characteristics that affect the range of operation and performance of the BRS.
- The Quantum Well Infrared Photodetector (QWIP) project completed the design and fabrication of the Indium-Gallium-Arsenide (InGaAs) detectors for use on the QWIP focal plane array (FPA) and conducted system simulations of the Computed Tomographic Imaging Spectrometer (CTIS). The QWIP/CTIS camera will allow remote analysis of HEL interaction with targets to characterize laser performance.
- The Directed Energy Data Acquisition Transformation (DEDAT) effort began fabrication of the prototype Compact Remote Data Acquisition System (CRDAQ). The CRDAQ will provide survivable data collection capabilities to support T&E of Blue HPM systems and the T&E of Blue systems in a Red HPM environment.

Range Profiles of Turbulence, Spatiotemporal Beam Characterization, Modulated Retro Target Sensors (MRTS), and Microwave Test Diagnostics efforts initiated in FY 2004. A Broad Agency Announcement (BAA) was initiated to select projects for FY 2005 award.

FY 2005 Accomplishments:

Efforts initiated in prior fiscal years continued. These efforts included:

- BRS completed assembly of the five single mirrors and fabrication of a Chemical Oxygen-Iodine Laser (COIL) four mirror prototype system. The COIL four-mirror system demonstrated the ability to create far-field beam characteristics in the near-field to support T&E of HEL systems within the limited confines of laser ranges. A simulation was developed to facilitate design of future BRSs that can be tailored to specific HEL systems and far-field beam patterns. The deliverable prototype mirrors and the simulation system provide residual test capabilities.
- DEDAT completed the development, fabrication, and test of a three-axis field probe and simultaneous trigger capability. The three-axis field probe will be used with the CRDAQ to complete field tests of the survivable data collection system in an HPM environment. The simultaneous trigger capability supports T&E using multiple data collection systems.
- Range Profiles of Turbulence completed the design of a brassboard Differential Image Motion (DIM) Light Detection and Ranging (LIDAR) system that will allow the characterization of optical turbulence along a HEL beam path to support T&E of laser weapon systems. Fabrication of subsystems was initiated in FY 2005.
- Modulated Retro Target Sensors (MRTS) completed development of a breadboard retroreflector sensor system that will be capable of providing on-target measurements of HEL performance during T&E events of dynamic targets. The breadboard system will be characterized in a laboratory environment and used as the basis for a prototype system design that will use the retroreflector to transmit the sensor data from the target to an off-board data acquisition system.

Projects identified by the FY 2005 BAA process were initiated. Efforts were planned in the following areas:

- Techniques to measure, both spatially and temporally, the rapid temperature changes of the external surface of a target under laser irradiation over the duration of the engagement without affecting the thermal characteristics of the target.

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- Survivable non-intrusive HPM sensors to measure electrical fields, magnetic fields and polarity, power density, and effects at high sample rates and wide dynamic range within HPM beams as well as measuring embedded voltage and induced current on HPM targets.

A BAA was initiated in FY 2005 to select efforts for FY 2006 award.

FY 2006 Plans: NA

FY 2007 Plans: NA

C. (U) **OTHER PROGRAM FUNDING** NA

D. (U) **ACQUISITION STRATEGY** NA

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RDT&E PROJECT JUSTIFICATION SHEET (R-2a)				February 2005				
OPERATIONAL TEST AND EVALUATION, DEFENSE (0460) BUDGET ACTIVITY THREE, PE 0603941D				INFORMATION SYSTEMS TECHNOLOGY TEST				
\$ in Millions	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Information Systems Technology Test	0.090	1.141						

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION

The S&T community is developing advanced Information Systems Technology (IST) to support DoD's Critical Transformational Capabilities-Conduct Information Operations, Deny Enemy Sanctuary, and Leverage Information Technologies. Advancements in IST will provide commanders and staff with an adaptive, network-centric, configurable information visualization environment, which will improve the speed and quality of command decisions. Information assurance and survivability are central to achieving these advancements. These IST advances will enable a spectrum of capabilities ranging from enhanced management and exploitation of intelligence, surveillance, and reconnaissance assets to next-generation tactical radio systems. Successful implementation of these transformational capabilities will necessitate a corresponding transformation in DoD's ability to test and evaluate IST. The IST Test (ISTT) focus area will address the T&E scenarios, technologies, and analysis tools required to ensure that information systems delivered to the warfighter provide an assured capability to acquire, verify, protect, and assimilate information necessary for battlefield dominance within a complex network-centric environment.

B. (U) ACCOMPLISHMENTS/PLANNED PROGRAM

	FY 2004	FY 2005	FY 2006	FY 2007
Information Systems Technology Test	0.090	1.141		

FY 2004 Accomplishments:

- Initiated planning for the ISTT focus area:
- Selected the Executing Agent (EA).
- Chartered the ISTT focus area.

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- Began assembling the working group and refining the ISTT roadmap.
- A Broad Agency Announcement (BAA) was initiated to select projects for future award.

FY 2005 Accomplishments:

Completed formation of the working group and finalized the roadmap for the ISTT focus area. Selected and initiated projects identified by the BAA process. The potential areas of investigation for initial efforts included:

- Methods and tools to evaluate the interoperability of network devices in large, complex network architectures.
- Techniques to evaluate composable data sources and network interactions.
- Tools to evaluate the effectiveness of information assurance (IA).
- Techniques to test decision-making systems, including the actions of intelligent agents.

A subsequent BAA was issued to select efforts for FY 2006 award.

FY 2006 Plans: NA

FY 2007 Plans: NA

C. (U) **OTHER PROGRAM FUNDING** NA

D. (U) **ACQUISITION STRATEGY** NA

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RDT&E PROJECT JUSTIFICATION SHEET (R-2a)				February 2005				
OPERATIONAL TEST AND EVALUATION, DEFENSE (0460) BUDGET ACTIVITY THREE, PE 0603941D				SOFTWARE TEST				
\$ in Millions	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Software Test		0.050						

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION

Use of complex, high-speed, software-intensive systems is increasing within weapons; Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) systems; and other automated information processing systems. Most software-intensive systems are developed, tested, and fielded in significantly shorter periods than hardware systems. Software components are generally upgraded more frequently than hardware in systems. Testing systems with software components requires rigorous software configuration control to ensure that reported test results apply to the actual fielded software.

Most current software tests are manpower intensive and require expert knowledge of the system under test. An automated, objective test capability is required to assess the effectiveness and performance of future software systems as well as to determine the appropriate amount of regression testing required when that software is modified. As the use of “learning” software proliferates, testing will be required to identify unacceptable behavior, detect defects in behaviors that have yet to be learned, and to predict the future performance of the learning software. Significant integration and interoperability issues among software systems and large databases must be overcome to enable testing of software-intensive systems. Artificial stimulation will be needed for both load and security testing. Methods to verify software integrity must also be identified. The Software Test focus area will develop the T&E technologies necessary to adequately test software intensive systems as the complexity of these systems increases in the future.

B. (U) ACCOMPLISHMENTS/PLANNED PROGRAM

	FY 2004	FY 2005	FY 2006	FY 2007
Software Test		0.050		

FY 2004 Accomplishments: NA

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FY 2005 Accomplishments:

Although substantive efforts are planned to begin in FY 2006, the program established the foundation for the focus area in FY 2005. This effort included:

- Exploring the capabilities of software centers of excellence to support advanced development efforts.
- Identifying subject matter experts.
- Identifying an Executing Agent.
- Establishing a working group and refining the Software Test roadmap.

A Broad Agency Announcement (BAA) will be issued to identify FY 2006 efforts.

FY 2006 Plans: NA

FY 2007 Plans: NA

C. (U) **OTHER PROGRAM FUNDING** NA

D. (U) **ACQUISITION STRATEGY** NA

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RDT&E PROJECT JUSTIFICATION SHEET (R-2a)				February 2005				
OPERATIONAL TEST AND EVALUATION, DEFENSE (0460) BUDGET ACTIVITY THREE, PE 0603941D				MODELING AND SIMULATION				
\$ in Millions	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Modeling and Simulation		0.050						

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION

Weapon and Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) systems are becoming more complex and software intensive as well as increasingly interdependent and interoperable with other systems. These characteristics coupled with enhanced performance, such as operating at hypersonic velocities, make it increasingly more difficult and unaffordable to perform comprehensive test and evaluation without the use of constructive, virtual, and live modeling and simulation (M&S). Much work has been done to develop M&S for use in engineering design (detailed engineering models), platform analysis (one-on-one), mission analysis (many-on-many), and theater level (force-on-force) simulations. However, advancements are needed to enable reusing a model from one of these levels with other models from the same or different levels to support T&E. In order to evaluate advanced weapon systems and systems-of-systems, advanced M&S technology tools are required to provide flexibility to integrate models and simulations of varying resolution and fidelity and to maximize the reuse of validated engineering models and simulations. The M&S focus area will leverage emerging technologies to facilitate model integration and improve simulation performance to support T&E of future weapon systems.

B. (U) ACCOMPLISHMENTS/PLANNED PROGRAM

	FY 2004	FY 2005	FY 2006	FY 2007
Modeling and Simulation		0.050		

FY 2004 Accomplishments: NA

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FY 2005 Accomplishments:

Although substantive efforts are planned to begin in FY 2006, the program established the foundation for this focus area in FY 2005. This effort included:

- Exploring the capabilities of M&S centers of excellence to support advanced development efforts.
- Identifying subject matter experts.
- Identifying an Executing Agent.
- Establishing a working group and refining the M&S roadmap.

A Broad Agency Announcement (BAA) will be issued to identify FY 2006 efforts.

FY 2006 Plans: NA

FY 2007 Plans: NA

C. (U) **OTHER PROGRAM FUNDING** NA

D. (U) **ACQUISITION STRATEGY** NA

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2)				February 2005				
OPERATIONAL TEST AND EVALUATION, DEFENSE (0460) BUDGET ACTIVITY SIX		CENTRAL TEST AND EVALUATION INVESTMENT PROGRAM (CTEIP) PROGRAM ELEMENT (PE) 0604940D8Z						
\$ in Millions	FY 2004	FY 2005	FY 2006*	FY 2007*	FY 2008*	FY 2009*	FY 2010*	FY 2011*
PE 0604940D	136.332	133.831						

***The National Defense Authorization Act of 2003 directed the establishment of the Defense Test Resource Management Center (DTRMC). The Act also requires the DTRMC to administer the Central Test and Evaluation Investment Program (CTEIP) and the Test and Evaluation/Science and Technology (T&E/S&T) program effective Fiscal Year 2006.**

Beginning with FY 2006, program elements 0603941D8Z (T&E/S&T) and 0604940D8Z (CTEIP) are transferred from the Operational Test and Evaluation, Defense appropriation (0460) to the Defense-wide RDT&E (0400) appropriation.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION

Since its inception in FY 1990, this program element has been, and continues to be, used to fund the development of critically needed, high-priority Test and Evaluation (T&E) capabilities for joint/multi-Service requirements. The Central Test and Evaluation Investment Program (CTEIP) uses a corporate investment approach to combine Service and Defense Agency T&E needs, maximize opportunities for joint efforts, and avoid unwarranted duplication of test capabilities. CTEIP focuses investments on projects that will have high productivity returns on investment. Projects under the CTEIP Program Element (PE) support two basic tasks: investments to improve the test capabilities base (Joint Improvement and Modernization (JIM) projects) and development of near-term solutions to test capability shortfalls in support of an ongoing operational test program (Resource Enhancement Project (REP)).

The JIM funds critically needed T&E investments in the major functional areas of test mission command, control, communications and instrumentation; electronic warfare systems; threat and computational simulation test and evaluation; space systems T&E; weapons effects test capabilities; targets; and physical and environmental test capabilities. The investments include both the demonstrations of advanced technologies needed to test increasingly complex and sophisticated weapon systems and the transition of these technologies into test capabilities. Examples of project subject matter include: automated data collection, processing, display, and archiving; smart munitions testing; modeling and simulation (M&S); advanced electronic combat systems; low-observable technologies and signature measurements; targets and target control;

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Time-Space-Position Information (TSPI); end-game measurement; testing of advanced materials application; test design; and advanced sensors and space systems. CTEIP continues as the focal point for fostering common architectures throughout the test and training communities to enhance the sharing of resources and links between test and training ranges. CTEIP has provided special focus to institutionalize the use of M&S as a practical test tool; to link ranges through internetting to enhance inter-range and inter-Service cooperation and resource sharing; and, to ensure development and acquisition of common instrumentation necessary for a more efficient test infrastructure. Analyses of alternative solutions are conducted for each investment project to validate T&E requirements, to define integrated support systems, and to determine overall cost effectiveness of the proposed test investments. The use of Department of Defense (DoD)-wide criteria for requirement validation, prioritization, and risk assessment ensures an effective test resource investment program.

The REP funds development of near-term solutions for critical ongoing operational tests supporting decisions on major, high-priority defense acquisition programs. These unanticipated operational test (OT) capability requirements arise from several sources such as a new threat system identified during OT planning, acquisition of foreign military assets that are critical in determining weapon system operational effectiveness, short timelines between system design maturity and scheduled OT, and emerging technologies and test requirements resulting from operational concept changes mandated by Congress or DOT&E, or system-of-systems testing. Funding these activities under the CTEIP provides the opportunity to coordinate and integrate these near-term test requirements with the total DoD test and evaluation investment planning, and ensures their availability and legacy for other programs that may have similar testing requirements. This PE also funds travel to carry out oversight of the CTEIP program.

This Research Category 6.4 PE supports the development and application of proven technologies to provide major test and evaluation capabilities required to meet DoD component weapon system test requirements.

Program Accomplishments and Plans:

FY 2004 Accomplishments:

JIM Projects:

- Completed concept development and initiated systems development of the Joint Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) project to develop a capability to test increasingly complex multi-discipline fusion concepts.
- Completed concept development and initiated systems development of the Soft Impact Location Capability project to provide the necessary instrumentation, signal processing, communication, and data processing capabilities to detect and locate the point and angle of impact of projectile and missile weapons within an 800m by 800m impact area.
- Completed the Advanced Range Telemetry project to improve the efficiency, reliability, utility, and availability of aeronautical telemetry spectrum by adapting advances in commercial communications technology.
- Completed concept development and initiated systems development of the Enhanced Flight Termination System project to develop an Ultra High Frequency (UHF) digital flight termination system for DoD unmanned flight vehicles.

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- Completed concept development and initiated systems development of the Enhanced Range Applications Project to provide a state-of-the-art Airborne Range Data System that supports next generation data collection requirements.
- Completed the Joint Directed Energy Combat Operations and Employment project to develop a master range plan for directed energy weapons test and evaluation capabilities.
- Completed the Test Technology Development and Demonstration project.
- Continued requirements documentation and development of a roadmap for future investments under the Digital Video Systems Development project to provide DoD test and evaluation facilities and ranges new capabilities to collect, process, store, and distribute data from high-performance digital imagery systems.
- Continued the Multi-Service Target Control System project to provide upgraded target control systems that meet tri-Service requirements.
- Continued development of the Airborne Icing Tanker project to develop an airborne icing capability for testing various DoD aircraft systems at both high and low altitude, suitably presenting natural rain and icing conditions.
- Continued standardization of the Test and Training Enabling Architecture (TENA) object model and the development of software tools and integration products within the Foundation Initiatives 2010 project.
- Continued the project to develop and demonstrate a new generation of rugged, miniaturized, on-board instrumentation applicable to smart munitions flight tests, within the Hardened Sub-Miniature Telemetry and Sensor System Product Improvement project.
- Continued the Land and Sea Vulnerability Test Capability project to provide an instrumented land-sea interface test capability at the Aberdeen Test Center.
- Continued development of the limited Roadway Simulator capability for tractor-trailer combination testing.
- Continued systems development of the Contamination Avoidance Detector Test Suite project to provide test methodology, instrumentation, and test fixtures required to test and evaluate current and developmental chemical/biological detector systems over the entire range of expected use conditions.
- Continued systems development of the Electromagnetic Environment Effects Generating System project to provide a multi-Service test facility capable of assessing actual performance of a full-scale, fixed, or rotary-winged aircraft completely immersed in a user-specified radio frequency environment.
- Continued the development and demonstration of TSPI, flight termination/safe and arm (FTSA), and telemetry functions on advanced missile platforms under the Joint Advanced Missile Instrumentation project.
- Continued the Electromagnetic Transient Test and Evaluation Facility project to provide a capability to assess aircraft hardness to electro-magnetic transient environments to meet military standard (MILSTD) 464 requirements.
- Continued the Infrared Sensor Stimulator product improvement, the Advanced Radar Environment Stimulator project, the Communications, Navigation, and Identification follow-on, and initiated development of the Two-Color Infrared Missile Warning System Stimulator under the Joint Installed Systems Test Facility Product Improvements project, to provide improved installed systems capabilities needed to support next generation aircraft testing.

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- Continued the Tri-Service Signature Measurement and Database System project to provide the capability to characterize the detailed spatial, spectral, and temporal signatures of aircraft, missiles, ground vehicles, ships, undersea vehicles, and their countermeasures in realistic environments.
- Continued the Digital Video Laboratory project to provide digital video data analysis and reporting capability.
- Continued threat system simulator development efforts under the Threat System Simulator Development project to improve integration, reduce potential duplication in threat and target development, and ensure that accurate, cost-effective representations of threat systems are available to support testing.
- Continued systems development of the Advanced Instrumentation Data and Control System project to develop state-of-the-art instrumentation and control systems to meet DoD T&E requirements for propulsion systems, aerodynamic systems, and space systems.
- Continued the Tri-Service and CTEIP support projects.
- Initiated concept development for improved test and evaluation capabilities for directed energy weapons.
- Initiated development of system enhancements under the Airborne Separation Video project.
- Initiated validation of flight test procedures and Unmanned Aerial Vehicle (UAV) operations in the U.S. National Airspace alongside manned aircraft, under the UAV Systems and Operations Validation Facility Program.
- Initiated and completed requirements identification and concept development, and initiated systems development for using unmanned systems in training, operational exercises, and test and evaluation, under the Unmanned Systems Testbed project.
- Initiated the Missile Engagement Threat Simulator project to develop an enhanced capability to evaluate the vulnerability of aircraft to Man-Portable Air Defense Systems (MANPADS).
- Initiated concept development for the Joint Mobile Infrared Countermeasures Test System project to provide infrared spectrum test instrumentation for open air ranges.

Resource Enhancement Project:

- Completed the Fire and Forget Missile Van Integration subproject to instrument and integrate critical MANPAD threats to evaluate F/A-18 expendable countermeasure effectiveness.
- Completed the Active Electronically Scanned Array (AESA) Jammer subproject to develop a simulator that can replicate three threat ground-to-air jammers.
- Completed the Weapon Set-to-Hit Threat Target subproject to provide an unmanned, cost effective target for conducting set-to-hit testing of existing and future torpedoes.
- Completed the Radio Frequency Phase Distribution Upgrade subproject, which procures Advanced Tactical Electronic Warfare Simulator (ATEWES) Microwave Phase Distribution (MDS) hardware and develops software subsystems to meet EA-6B Improved Capability (ICAP) III LR-700 receiver upgrade and planned follow-on interferometer receiver systems test.
- Continued the Advanced Mine Simulation System subproject to provide significant improvements to existing threat mine simulation test capabilities.

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- Continued the Advanced System Endgame Methodology for Actual Threat Systems subproject to develop and integrate emerging technology for high fidelity, real-time endgame assessment for threat system engagements in support of Comanche operational testing.
- Continued the Commander Air Defense Environment Test Tool subproject to develop a test tool to emulate, stimulate and evaluate the Single Integrated Air Picture Command, Control, Communications, Computers, and Intelligence (C4I) system-of-systems in support of the Area Air Defense Commander.
- Continued the Threat Signals A subproject to develop and implement new threat surface-to-air missile system signals in the Joint Communications Simulator to ensure testing in an operationally dense and coherent scenario based environment.
- Continued the Seeker Integration subproject to characterize and integrate recently received foreign hardware into the Electronic Combat Range (ECR) at China Lake, CA, to support ongoing electronic countermeasure testing.
- Continued the Dense Environment Radio Frequency Injection subproject to develop and implement a radio frequency signal simulator system to provide direct injection of a dense RF environment into the system under test.
- Continued the Shallow Water Antisubmarine Warfare (ASW) Target subproject to modify an existing, manned diesel-electric research submarine for use as an Anti ASW target to support Mk 54 and Mk 48 ADCAP torpedo testing.
- Initiated the National Warning Network Scenarios and Test Tools subproject to build scenarios, test drivers, and test tools for new OT requirements resulting from real-world events and recent program and threat changes.
- Initiated the Voice/Video Emulation Test Tool subproject to develop two digital voice emulation systems to stimulate and evaluate voice and video transmissions from realistic operational ranges in support of tactical command and control systems.
- Initiated the Suite of Integrated Infrared Countermeasure (SIIRCM) Instrumentation Suite subproject to upgrade the Super Multi-role Electro-Optic Simulator to incorporate a night vision camera, multi-band laser detector, and laser range finder to simulate characteristics of ultraviolet (UV) and infrared (IR) signatures.
- Initiated the Supersonic Sea Skimming Target (SSST) Stream Raid subproject to provide two Anti-Ship Cruise Missile threat targets with near simultaneous arrivals on similar bearings to resolve the system track management, coordinated combat direction, and survivability critical operational issues (COIs).
- Initiated the TSPI Advanced Tracker subproject to upgrade the current TSIP Advanced Tracker (TAT) with long range acquisition radar to increase its ability to acquire and track targets at greater distances, in low light, and in obscured weather.
- Initiated the Expeditionary Fighting Vehicle (EFV) Threat Vehicle Surrogate Targets subproject to develop 2½-D infrared (IR) plastic ground surrogate targets to emulate the appearance, thermal signature, and mobility of BMD-2, BMP-2, BTR-70, and BRDM-2 threat vehicles and Light Amphibious Vehicle (LAV) and Bradley vehicles.
- Initiated the Small Contingency Theater Positioning System subproject to develop a system that will enable time, space, and position information of test assets in environments encountered under small contingency operations (Military Operation Urbanized Terrain, urban, mountains, caves, etc.).
- Initiated the Foreign Targets Surrogate subproject to develop eight threat mine surrogates for use in Commander Operational Test and Evaluation Force (COMOPTEVFOR) operational tests and assessments of Mine Countermeasure systems.

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- Initiated the Supersonic Sea Skimming Target (SSST) Enhanced Maneuverability subproject to upgrade the GQM-163A target design to perform square wave inputs to perform terminal weaves which will more closely represent threat anti-ship missile maneuvers.

FY 2005 Accomplishments:

JIM Projects:

- Completed the project to develop and demonstrate a new generation of rugged, miniaturized, on-board instrumentation applicable to smart munitions flight tests, within the Hardened Sub-Miniature Telemetry and Sensor System Product Improvement project.
- Completed development of the Roadway Simulator capability for tractor-trailer combination testing.
- Completed concept development and initiated systems development for improved test and evaluation capabilities for directed energy weapons.
- Completed development of system enhancements under the Airborne Separation Video project.
- Completed systems development of the Electromagnetic Environment Effects Generating System project to provide a multi-service test facility capable of assessing actual performance of a full-scale, fixed, or rotary-winged aircraft completely immersed in a user-specified radio frequency environment.
- Completed the Electromagnetic Transient Test and Evaluation Facility project to provide a capability to assess aircraft hardness to electro-magnetic transient environments to meet Military Standard 464 requirements.
- Completed the Tri-Service Signature Measurement and Database System project to provide the capability to characterize the detailed spatial, spectral, and temporal signatures of aircraft, missiles, ground vehicles, ships, undersea vehicles, and their countermeasures in realistic environments.
- Completed the requirements documentation and development of a roadmap for future investments under the Digital Video Systems Development project to provide DoD test and evaluation facilities and ranges new capabilities to collect, process, store, and distribute data from high-performance digital imagery systems.
- Completed the Multi-Service Target Control System project to provide upgraded target control systems that meet tri-Service requirements.
- Completed development of the Airborne Icing Tanker project to develop an airborne icing capability for testing various DoD aircraft systems at both high and low altitude, suitably presenting natural rain and icing conditions.
- Completed the Digital Video Laboratory project to provide digital video data analysis and reporting capability.
- Completed standardization of the Test and Training Enabling Architecture (TENA) object model and the development of software tools and integration products within the Foundation Initiatives 2010 project.
- Completed the Missile Engagement Threat Simulator project to develop an enhanced capability to evaluate the vulnerability of aircraft to Man-Portable Air Defense Systems (MANPADS).
- Completed concept development and initiated systems development for the Joint Mobile Infrared Countermeasures Test System project to provide infrared spectrum test instrumentation for open air ranges.

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- Continued validation of flight test procedures and unmanned aerial vehicle (UAV) operations in the U.S. National Airspace alongside manned aircraft, under the UAV Systems and Operations Validation Facility Program.
- Continued the Land and Sea Vulnerability Test Capability project to provide an instrumented land-sea interface test capability at the Aberdeen Test Center.
- Continued systems development of the Contamination Avoidance Detector Test Suite project to provide test methodology, instrumentation, and test fixtures required to test and evaluate current and developmental chemical/biological (CB) detector systems over the entire range of expected use conditions.
- Continued the development and demonstration of TSPI, flight termination/safe and arm (FTSA), and telemetry functions on advanced missile platforms under the Joint Advanced Missile Instrumentation project.
- Continued systems development of the Joint C4ISR project to develop a capability to test increasingly complex multi-discipline fusion concepts.
- Continued the Infrared Sensor Stimulator product improvement and the Advanced Radar Environment Stimulator project, and completed the Communications, Navigation, and Identification follow-on and the Two-Color Infrared Missile Warning System Stimulator under the Joint Installed Systems Test Facility Product Improvements project, to provide improved installed systems capabilities needed to support next generation aircraft testing.
- Continued systems development of the Soft Impact Location Capability project to provide the necessary instrumentation, signal processing, communication, and data processing capabilities to detect and locate the point and angle of impact of projectile and missile weapons within an 800m by 800m impact area.
- Continued systems development of the Enhanced Flight Termination System project to develop a UHF digital flight termination system for DoD unmanned flight vehicles.
- Continued systems development of the Advanced Instrumentation Data & Control System project to develop state-of-the-art instrumentation and control systems to meet DoD T&E requirements for propulsion systems, aerodynamic systems, and space systems.
- Continued systems development of the Enhanced Range Applications Project to provide a state-of-the-art Airborne Range Data System that supports next generation data collection requirements.
- Continued threat system simulator development efforts under the Threat System Simulator Development project to improve integration, reduce potential duplication in threat and target development, and ensure that accurate, cost-effective representations of threat systems are available to support testing.
- Continued the Tri-Service and CTEIP support projects.
- Initiated concept development for the Integrated Network Enhanced Telemetry project to develop a network-enhanced telemetry capability for T&E ranges and facilities.
- Initiated and completed concept development and initiate systems development for the Hypersonic Propulsion Test Capability project to provide a variable Mach number test capability at the Arnold Engineering Development Center.
- Initiated the Test and Training Enabling Architecture (TENA) Software Development Activity project to develop software enhancements and integration tools.

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- Initiated and completed systems development for the Unmanned Systems Testbed project, to provide capabilities for using unmanned systems in training, operational exercises, and test and evaluation.
- Initiated and completed the Film Elimination project to decrease reliance on wet film imagery and to facilitate the transition to digital systems.
- Initiated and completed the Joint Gulf Range Complex Upgrade Project to provide upgraded range control capabilities and the Gulf Range.

Resource Enhancement Project:

- Completed the Advanced Mine Simulation System subproject to provide significant improvements to existing threat mine simulation test capabilities.
- Completed the Advanced System Endgame Methodology for Actual Threat Systems subproject to develop and integrate emerging technology for high fidelity, real-time endgame assessment for threat system engagements in support of Comanche operational testing.
- Completed the Commander Air Defense Environment Test Tool subproject to develop a test tool to emulate, stimulate and evaluate the Single Integrated Air Picture Command, Control, Communications, Computers, and Intelligence (C4I) system-of-systems in support of the Area Air Defense Commander.
- Completed the Threat Signals A subproject to develop and implement new threat surface-to-air missile system signals in the Joint Communications Simulator to ensure testing in an operationally dense and coherent scenario based environment.
- Completed the Dense Environment Radio Frequency Injection subproject to develop and implement a radio frequency signal simulator system to provide direct injection of a dense RF environment into the system under test.
- Completed the Seeker Integration subproject to characterize and integrate recently received foreign hardware into the Electronic Combat Range (ECR) at China Lake, CA, to support ongoing electronic countermeasure testing.
- Completed the Shallow Water Antisubmarine Warfare (ASW) Target subproject to modify an existing, manned diesel-electric.
- Completed the National Warning Network Scenarios and Test Tools subproject to build scenarios, test drivers and test tools for new OT requirements resulting from real-world events and recent program and threat changes.
- Completed the Voice/Video Emulation Test Tool subproject to develop two digital voice emulation systems to stimulate and evaluate voice and video transmissions from realistic operational ranges in support of tactical command and control systems.
- Completed the SIIRCM Instrumentation Suite subproject to upgrade the Super Multi-role Electro-Optic Simulator to incorporate a night vision camera, multi-band laser detector, and laser range finder to simulate characteristics of UV and IR signatures.
- Completed the Supersonic Sea Skimming Target (SSST) Stream Raid subproject to provide two Anti-Ship Cruise Missile threat targets with near simultaneous arrivals on similar bearings to resolve the system track management, coordinated combat direction, and survivability critical operational issues (COIs).
- Completed the TSPI Advanced Tracker subproject to upgrade the current TSPI Advanced Tracker (TAT) with long range acquisition radar to increase its ability to acquire and track targets at greater distances, in low light, and in obscured weather.
- Completed the Expeditionary Fighting Vehicle (EFV) Threat Vehicle Surrogate Targets subproject to develop 2½-D infrared (IR)

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plastic ground surrogate targets to emulate the appearance, thermal signature, and mobility of BMD-2, BMP-2, BTR-70, and BRDM-2 threat vehicles.

- Completed the Small Contingency Theater Positioning System subproject to develop a system that will enable time, space, and position information of test assets in environments encountered under small contingency operations (Military Operation Urbanized Terrain, urban, mountains, caves, etc.).
- Completed the Foreign Targets Surrogate subproject to develop eight threat mine surrogates for use in COMOPTEVFOR operational tests and assessments of Mine Countermeasure systems.
- Completed the Supersonic Sea Skimming Target (SSST) Enhanced Maneuverability subproject to upgrade the GQM-163A target design to perform square wave inputs to perform terminal weaves which will more closely represent threat anti-ship missile maneuvers.
- Initiated the Advanced Capability Mobile Flight Simulator subproject to provide more realistic Tactical Ballistic Missile (TBM) threat scenario simulations.
- Initiated and completed Expeditionary Fighting Vehicle (EFV) Force-On-Force, Real-Time Casualty Assessment (RTCA) Test Instrumentation subproject to leverage off an existing instrumentation system to provide an improved operational test capability.
- Initiated and completed Field Referee of Low Concentrations of MS2 and OV Bio Aerosols subproject to modify a high volume aerosol collection instrument capable of collecting low concentrations of bio aerosols simulating actual threat agents.
- Initiated and completed the Information Assurance (IA) Susceptibility Testing for Global Air Traffic Management Avionics (GATM) subproject to expand an existing capability to support Beyond Line of Sight GATM and ground system information assurance testing.
- Initiated the Probability of Raid Annihilation (PRA) Testbed Common Threat and Environment Capability subproject to develop a common set of threat and natural environment representations for consistent assessment of ship self defense systems across ship classes.
- Initiated the Torpedo Proximity Scoring System subproject to develop a reliable and flexible prototype instrumentation system to support torpedo defensive system testing and evaluation requirements.
- Initiated and completed the Distributed Operational Test Command Center subproject to provide a distributed test control capability that integrates communications, data processing and test monitoring, and visual displays systems into a single capability.
- Initiated and completed the Test Control Communications Capability subproject to provide an integrated communications suite of hardware, software, and firmware protocols to provide realistic command, control, and communications testing.
- Initiated the Shootable Remote Threat Ground Targets subproject to provide six, low-cost ground targets operating in a tactical formation and an integrated portable autopilot and remote control system.

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FY 2006 Plans: NA

FY 2007 Plans: NA

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B. (U) PROGRAM CHANGE SUMMARY

(\$ in Millions)	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
FY 2005 President's Budget	136.168	123.562		
FY 2006 president's Budget	136.332	133.831		
Total Adjustments	.164	10.269		
Congressional program reductions		(1.931)		
Congressional rescissions				
Congressional increases		12.200		
Fiscal guidance adjustment				
Inflation adjustment				
Reprogramming	.164 ¹			

Notes:

1. Reprogramming from PE 0603941D to PE 0604940D.

C. (U) OTHER PROGRAM FUNDING NA

D. (U) ACQUISITION STRATEGY NA

E. (U) PERFORMANCE METRICS

Percentage of CTEIP projects that were developed and delivered to the DoD test community over the past five years.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2)				February 2005				
OPERATIONAL TEST AND EVALUATION, DEFENSE (0460) BUDGET ACTIVITY SIX		OPERATIONAL TEST AND EVALUATION (OT&E) PROGRAM ELEMENT (PE) 0605118D8Z						
\$ in Millions	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
PE 0605118D	37.675	43.192	43.928	47.577	49.406	53.198	54.337	55.500

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION

The Director of Operational Test and Evaluation (DOT&E) is responsible under Title 10 for policy and procedures for all aspects of operational test and evaluation within the Department of Defense (DoD), with particular focus on OT&E that supports major weapon system production decisions. Generally, there are over 250 programs and Advanced Concept Technology Demonstrations (ACTD) on the DOT&E oversight list including 79 Major Defense Acquisition Programs (MDAPs). These MDAPs may not proceed beyond low-rate initial production (LRIP) until OT&E of the program is complete. DOT&E must be involved early in the planning phase of each program to ensure adequate testing and satisfactory progress. Key elements of the DOT&E's oversight authority include:

- The approval of component Test and Evaluation Master Plans (TEMPS).
- The approval of component OT&E plans.
- Observation of, preparation for, and conduct of, field operational tests; analysis, evaluation, and assessment of the adequacy of OT&E and the operational effectiveness and suitability of the weapon system.
- Reporting results of OT&E that supports beyond LRIP decisions to the Secretary of Defense and Congress, as well as an annual report summarizing all OT&E activities and addressing the adequacy of test resources within DoD during the previous fiscal year.

DOT&E also oversees and resources OT&E community efforts to plan and execute joint operational evaluations of Information Assurance and Interoperability of fielded systems during major Combatant Command and Service exercises, and reports trends and findings in the Annual Report. This PE includes funds to obtain Federally Funded Research and Development Center (FFRDC) support in performing the described tasks and funds travel to carry out oversight of the OT&E program.

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This Research Category 6.5 PE supports management activities for DOT&E for oversight of operational test and evaluation of the Department's weapon systems.

Program Accomplishments and Plans:

FY 2004 Accomplishments:

Key elements of DOT&E's oversight authority, as described under MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION, were conducted, as applicable, for the following programs:

- Army Programs:
 - ABRAMS Upgrade - Abrams Tank Upgrade
 - Advanced Field Artillery Tactical Data System (AFATDS)
 - Advanced Threat Infrared Countermeasures/Common Missile Warning System (ATIRCM/CMWS)
 - Aerial Common Sensor (ACS)
 - Air and Missile Defense Planning and Control System (AMDPCS)
 - All Source Analysis System (ASAS)
 - AN/TPQ-47 Counterfire Radar
 - Anti-Personnel Landmine Alternative (APLA)/Spider
 - Battle Command Sustainment Support System (BCS3)
 - Biometrics
 - Black Hawk Upgrades (UH-60M)
 - Bradley Upgrade - Bradley Fighting Vehicle System Upgrade - A3
 - CH-47F - Cargo Helicopter (CH-47D helicopter upgrade program)
 - Distributed Common Ground System - Army (DCGS-A)
 - Excalibur (Family of Precision 155mm Projectiles)
 - Extended Range/Multipurpose Unmanned Aerial Vehicle (ER/MP UAV)
 - Family of Medium Tactical Vehicles (FMTV)
 - Force XXI Battle Command Brigade & Below (FBCB2) Program
 - Future Cargo Aircraft
 - Future Combat System (FCS) and all associated systems, including:
 - Network Battle Command
 - Infantry Carrier Vehicle (ICV)
 - Command and Control Vehicle (C2V)
 - Recon and Surveillance Vehicle (R&SV)
 - Mounted Combat System (MCS)

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- Non-Line-of-Sight Mortar (NLOS M)
- Non-Line-of-Sight Cannon (NLOS C)
- FCS Medical Treatment & Evacuation Vehicle (MV)
- FCS Recovery Maintenance Vehicle (FRMV)
- UAV Class I (Organic Air Vehicle-Light) (UAV CL I)
- UAV Class II (Organic Air Vehicle-Medium) (UAV CL II)
- UAV Class III (Small UAV) (UAV CL III)
- UAV Class IV (Fire Scout) (UAV CL IV GROUND)
- Armed Robotic Vehicle (ARV) Assault (ASLT)
- Armed Robotic Vehicle (ARV) Assault Light (ASLT(L))
- Armed Robotic Vehicle (ARV) Reconnaissance & Surveillance Target & Acquisition (RSTA)
- Multi-Function Utility/Logistics and Equipment Vehicle (MULE) Countermine
- Multi-Function Utility/Logistics and Equipment Vehicle (MULE) Transport
- Small Manpackable Unmanned Ground Vehicle (SUGV)
- Unattended Ground Sensors (UGS)
- Non-Line-of-Sight Launch System (NLOS LS) - to include Precision Attack Munition (PAM) and Loitering Attack Munition (LAM)
- Intelligent Munitions System (IMS)
- Mid-Range Munitions (MRM)
- General Fund Enterprise Business System (GFEBS)
- Global Combat Support System - Army (GCSS-A)
- Global Command and Control System - Army (GCCS-A)
- Guided Multiple Launch Rocket System (GMLRS)
- Guided Multiple Launch Rocket System (GMLRS) - Unitary
- High Mobility Artillery Rocket System (HIMARS)
- Integrated System Control (ISYSCON V4)
- Javelin - Advance Anti-Tank Weapon System - Medium
- Joint Land Attack Cruise Missile Defense Elevated Netted Sensors (JLENS)
- Joint Network Transport Capability-Spiral (JNTC-S)
- Joint Tactical Radio System (JTRS) Cluster 1 (JTRS Cluster 1)
- Joint Tactical Radio System (JTRS) Cluster 5 (JTRS Cluster 5)
- Kiowa Warrior (OH-58D)
- Land Warrior
- Line-of-Sight Anti-Tank Missile (LOSAT)
- Longbow Apache (AH-64D) Block III

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- Longbow Hellfire Missile (Upgrades/Modifications)
- Maneuver Control System (MCS) Army Tactical Command and Control System (MCS (ATCCS))
- Medium Extended Air Defense System (MEADS)
- Mobile Tactical High Energy Laser (MTHL)
- PATRIOT PAC-3 Patriot Advanced Capability-3
- Precision Guided Mortar Munitions (PGMM)
- Shadow Unmanned Aerial Vehicle (Shadow UAV)
- Single Channel Anti-Jam Man-Portable (SCAMP) (MILSTAR, Block II)
- Single Channel Anti-Jam Man-Portable (SCAMP) System Enhancement Program (SEP)
- Small Unmanned Aerial Vehicle (Raven UAV)
- Stryker - Armored Vehicles
 - Stryker - ATGM Vehicle
 - Stryker - Command Vehicle
 - Stryker - Engineer Squad Vehicle
 - Stryker - Fire Support Vehicle
 - Stryker - Infantry Carrier Vehicle
 - Stryker - Medical Evacuation Vehicle
 - Stryker - Mobile Gun System
 - Stryker - Mounted Mortar Carrier
 - Stryker - Nuclear, Biological, Chemical Reconnaissance Vehicle
 - Stryker - Reconnaissance/Surveillance Vehicle-Surface-Launched AMRAAM (SLAMRAAM) Missile
- Suite of Integrated Radio Frequency Countermeasures (SIRFC) (AN/ALQ-211)
- Transportation Coordinators' Automated Information for Movements System II (TC-AIMS II)
- Visual Information Support (VIS)
- Warfighter Information Network-Tactical (WIN-T)
- XM8 5.56mm Modular Assault Weapon System
- XM25 25mm Airburst Weapon System
- XM29 Integrated Air Burst Weapon System (formerly the OICWS)
- XM307 Objective Crew Served Weapon System (OCSWS)
- Navy Programs:
 - Acoustic Rapid COTS Insertion for SONAR
 - Active Electronically Scanned Array (AESA)
 - AGM-88E Advanced Anti-Radiation Guided Missile (AARGM) Program
 - Advanced Deployable System (ADS)
 - Advanced Seal Delivery System (ASDS)

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- AIM-9X - Air-to-Air Missile Upgrade
- Airborne Mine Neutralization System (AMNS)
- Air Early Warning (AEW)
- AN/AAR-47 V2 Upgrade Missile/Laser Warning Receiver
- AN/ALR-67 Advanced Special Receiver (ASR) V2 & V3
- AN/APR-39A V2 Radar Warning Receiver
- AN/SPY-1 B/D (All Versions)
- AN/WSQ-11 Countermeasure Anti-Torpedo
- Ballistic Missile Technical Collection (BMTC)
- Broad Area Maritime Surveillance (BAMS)
- Heavy Lift Replacement (HLR) Helicopter (CH-53X Upgrade to USMC H-53 Program)
- Cooperative Engagement Capability (CEC)
- Cobra Judy Replacement (CJR) - Ship-based radar system
- CVN-68 - *Nimitz* CLASS Nuclear Powered Aircraft Carriers
- CVN-21 - Next Generation Nuclear Attack Carrier
- DDG-51 Guided Missile Destroyer
- DD(X) Future Surface Combatant (including Long-Range Land Attack Projectile)
- Defense Integrated Military Human Resources System (DIMHRS)
- Deployable Joint Command and Control (DJC2)
- E-2C Advanced Hawkeye (E2C Radar Modernization Program (RMP))
- E-2C Reproduction Hawkeye
- EA-6B Improved Capabilities (ICAP) III & Multiple Upgrades (Low-Band Transmitter, Band 7-8 Transmitter, USQ-113 Communications Jammer)
- E/A-18G (electronic variant of F/A-18)
- Expeditionary Fighting Vehicle (EFV)
- Evolved Seasparrow Missile (ESSM)
- Extended Range Munition (ERM)
- F/A-18 E/F Hornet Naval Strike Fighter (ALL UPGRADES)
- Fixed Distributed System (FDS)
- Global Command and Control System - Maritime (GCCS-M)
- Global Combat Support System - Marine Corps (GCSS-MC)
- H-1 Upgrades (4BW/4BN)
- Identification Friend or Foe Mark VIIA Mode 5
- Integrated Defensive Electronic Countermeasure (IDECM)
- Integrated Surface Ship ASW Combat System (AN/SQQ-89)

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R-1 Shopping List – Item No 3

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- Joint Mission Planning System (JMPS)
- Joint Standoff Weapon (JSOW) Baseline/Unitary
- KC-130J Aircraft
- LHA(R) - New Amphibious Assault Ship
- LHD-1 Amphibious Assault Ship
- LHD-8 Amphibious Assault Ship
- Littoral Combatant Ship (LCS)
- LPD-17 Amphibious Transport Dock (including 30mm ammunition)
- MH-60R Multi-Mission Helicopter Upgrade
- MH-60S Helicopter (Utility helicopter replacing existing CH-46D, HH-60H, SH-3 & UH-1N helicopters)
- Multi-Functional Information Distribution System – Low-Volume Terminal (MIDS-LVT)
- MK-48 Torpedo Mods
- Multi-Mission Maritime Aircraft (MMA)
- Maritime Prepositioning Force (Future) (MPF (F))
- Naval Integrated Fire Control-Counter Air (NIFC-CA)
- Navy Advanced EHF Multi-Band Terminal (NMT)
- Navy Enterprise Resource Planning (ERP) (including Navy Enterprise Maintenance Automated Information System (NEMAIS))
- Navy-Marine Corps Intranet (NMCI)
- Rapid Airborne Mine Clearance System (RAMICS)
- Rolling Airframe Missile (RAM)
- Ship Self Defense System (SSDS)
- Surface Electronic Warfare Improvement Program (SEWIP)
- SSGN *Ohio* Class Conversion
- SSN-21 *Seawolf*/AN/BSY-2
- SSN-774 *Virginia* Class Submarine
- Standard Surface-to-Air Missile 6 (SM-6)
- Standard Missile - 2 (SM-2) (Blocks III/IV)
- Submarine Exterior Communications System (SubECs) (including Common Submarine Radio Room (CSRR))
- T-AKE Lewis & Clark Class of Auxiliary Dry Cargo Ships
- T-AOE(X) (Fast Combatant Support Ship)
- Tactical Control System (TCS)
- Tactical Tomahawk Missile
- Tactical Tomahawk Mission Planning System/Tomahawk Command & Control System (MPS/TCCS)
- Theater Support Vessel/High Speed Connector (TSV/HSV)

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- Trident II Missile
- V-22 Osprey Joint Advanced Vertical Lift Aircraft
- Vertical Take-Off Unmanned Aerial Vehicle (VTUAV)
- VXX Presidential Helicopter Fleet Replacement Program
- Air Force Programs:
 - Advance EHF (AEHF)
 - ALR-56M Radar Warning Receiver
 - ALR-69 Radar Warning Receiver
 - Advanced Medium Range Air-to-Air Missile (AMRAAM)
 - Advanced Polar System (APS)
 - Airborne Warning and Control System (AWACS (E-3)) Upgrades
 - Air Operations Center - Weapons System (AOC-WS)
 - B-1B CMUP - B-1 LANCER Penetrating Bomber Conventional Munitions Upgrade Program (CMUP)
 - B-2 Radar Modernization Program (B-2 RMP)
 - B-52 Reengineering Program
 - C-5 Avionics Modernization Program (AMP)
 - C-5 Reliability and Reengineering Program (RERP)
 - C-17A - Globemaster III Advance Cargo Aircraft
 - C-130 AMP - Avionics Modernization Program
 - C-130J Hercules Cargo Aircraft (All Variants)
 - Combatant Commanders Integrated Command and Control System (CCIC2S)
 - Combat Survivor Evader Locator (CSEL)
 - Defense Enterprise Accounting Management System (DEAMS)
 - Deliberate and Crisis Action Planning and Execution Segments (DCAPES)
 - Distributed Common Ground System - Air Force (DCGS-AF) (including Block 10)
 - E-4B Modernization Program
 - E-10A Multi-Sensor Command and Control Aircraft (MC2A) Program
 - EB-52
 - Evolved Expendable Launch Vehicle (EELV)
 - Family of Beyond Line-of-Sight Terminals (FAB-T)
 - F-117 Infra-Red Acquisition and Designation System (IRADS)
 - F-15 Tactical Electronic Warfare Suite (TEWS) (AN/ALQ-135 Band 1.5 Fiber-Optic Towed Decoy)
 - F/A-22 - Advanced Tactical Fighter
 - F-35 Joint Strike Fighter (JSF)
 - Financial System Initiative (FSI)

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- Global Broadcast Service (GBS)
- Global Combat Support System - Air Force (GCSS-AF)
- Global Command and Control System - Air Force (GCCS-AF)
- Global Hawk High Altitude Endurance Unmanned Aerial Vehicle
- Global Positioning System III (GPS III)
- Global Transportation Network-21 (GTN-21)
- Integrated Strategic Planning and Analysis Network (ISPAN)
- Joint Air-Surface Standoff Missile (JASSM) and JASSM Expanded Response (ER)
- Joint Direct Attack Munition (JDAM)
- Joint Helmet Mounted Cueing System (JHMCS)
- Joint Mission Planning System (JMPS)
- Joint Precision Approach and Landing System (JPALS)
- Joint Primary Aircraft Training System (JPATS)
- Joint Tactical Radio System (JTRS) Cluster Airborne/Maritime/Fixed Site (AMF)
- KC-135 Global Air Traffic Management (GATM) Upgrade
- KC-135 Recapitalization Program
- Large Aircraft Infrared Countermeasures (LAIRCM)
- MILSTAR - (Satellite Low/Med Data Rate Communications)
- Minuteman III Guidance Replacement Program
- Minuteman III Propulsion Replacement Program
- Multiple Platform - Common Data Link (MP-CDL)
- Multi-Platform Radar Technology Insertion Program (MP-RTIP)
- Mobile User Objective System (MUOS)
- National Airspace System (NAS)
- National Polar-Orbiting Operational Environment Satellite (NPOESS)
- NAVSTAR Global Positioning System
- Navy Extremely High Frequency Satellite Communications (SATCOM) Program (NESP)
- Personnel Recovery Vehicle (PRV)
- Predator Unmanned Aerial Vehicle (UAV) RQ/MQ-1
- Predator B Armed Unmanned Aerial Vehicle (UAV) MQ-9
- Space-Based Infrared System Program High Component (SBIRS-HIGH)
- Space Based Radar (SBR)
- Small Diameter Bomb (SDB)
- Secure Mobile Anti-Jam Reliable Tactical Terminal (SMART-T)
- Tactical Air Control System (TACS)

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- Theater Battle Management Core System (TBMCS)
- Transformational SATCOM System (TSAT)
- Ultra High Frequency (UHF) Follow-on Satellite
- Wideband Gapfiller
- Wind Corrected Munitions Dispenser (CBU-103/105)
- Other DoD Programs:
 - Ballistic Missile Defense Program
 - Ground Based Midcourse Defense Segment (includes Ground Based Interceptor (GBI), Ground Based Radar (GBR), and Battle Management C3 (BMC3))
 - AEGIS BMD and SM-3 BLOCK I
 - Space Tracking and Surveillance System (STSS)
 - Theater High-Altitude Area Defense (THAAD)
 - YAL-1 Airborne Laser (ABL)
 - Business System Modernization (BSM)
 - Artemis (Chemical Agent Standoff Detection System)
 - Internet Protocol version 6 (IPv6)
 - Joint Biological Agent Identification and Diagnosis System (JBAIDS)
 - Joint Biological Point Detection System (JBPDS)
 - Joint Biological Stand-Off Detection System (JBSDS)
 - Joint Chemical Agent Detector (JCAD)
 - Joint Common Missile
 - Joint Service Light NBC Reconnaissance System (JSLNBCRS)
 - Joint Service Lightweight Standoff Chemical Agent Detector (JSLSCAD)
 - Joint Service Sensitive Equipment Decontamination (JSSED)
 - Joint Warning and Reporting Network (JWARN)
 - Cryptologic Mission Management (CMM)
 - Consolidated Advanced Resale Transaction System (CARTS)
 - Chemical Demilitarization
 - Composite Health Care System II (CHCS II)
 - Defense Message System (DMS)
 - Defense Travel System (DTS)
 - DFAS Corporate Database/Warehouse (DCD/DCW)
 - Geoscout Block 1
 - Global Information Grid Bandwidth Expansion (GIG-BE)
 - Global Command & Control System - Joint (GCCS-J)

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- Global Combat Support System COCOM/JTF (GCSS-(CC/JTF))
- Global Electromagnetic Spectrum Analysis System (GEMSAS)
- High Performance Computing Modernization (HPCM)
- Joint Tactical Radio System Waveform (JTRS WAVEFORM)
- Joint Unmanned Combat Air System (JOINT UCAS) (includes AF and Navy UAV programs)
- Journeyman
- Net-Centric Enterprise Services (NCES)
- Key Management Infrastructure (KMI)
- Public Key Infrastructure (PKI)
- Rebuilding Analysis (REBA)
- Teleport
- Theater Medical Information Program (TMIP)
- Trailblazer (TBMMP)

Information Assurance and Interoperability Evaluations:

- Evaluations were performed in conjunction with approximately 20 Combatant Command and Service Exercises. All Operational Test Agencies have fully engaged and assembled capable teams for planning, execution, and analysis of the information assurance and interoperability evaluations. Threat realism during exercises and relevance of the Red Team activities to the warfighter mission have both improved as compared to events before this initiative began. Improvements in warfighter information assurance posture have been observed in selected events, and efforts to proliferate these improvements across all Combatant Commands have been initiated. Baseline performance data for information assurance has been captured, and standard metrics have been identified.

FY 2005 Accomplishments:

Key elements of DOT&E's oversight authority, as described under MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION, were conducted, as applicable, for the following programs:

- Army Programs:
 - ABRAMS Upgrade - Abrams Tank Upgrade
 - Advanced Field Artillery Tactical Data System (AFATDS)
 - Advanced Threat Infrared Countermeasures/Common Missile Warning System (ATIRCM/CMWS)
 - Aerial Common Sensor (ACS)
 - Air and Missile Defense Planning and Control System (AMDPCS)
 - All Source Analysis System (ASAS)
 - AN/TPQ-47 Counterfire Radar

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- Armed Reconnaissance Helicopter (ARH)
- Anti-Personnel Landmine Alternative (APLA)/Spider
- Battle Command Sustainment Support System (BCS3)
- Biometrics
- Black Hawk Upgrades (UH-60M)
- Bradley Upgrade - Bradley Fighting Vehicle System Upgrade - A3
- CH-47F - Cargo Helicopter (CH-47D helicopter upgrade program)
- Distributed Common Ground System - Army (DCGS-A)
- Excalibur (Family of Precision 155mm Projectiles)
- Extended Range/Multipurpose Unmanned Aerial Vehicle (ER/MP UAV)
- Family of Medium Tactical Vehicles (FMTV)
- Force XXI Battle Command Brigade & Below (FBCB2) Program
- Future Cargo Aircraft
- Future Combat System (FCS) and all associated systems, including:
 - Network Battle Command
 - Infantry Carrier Vehicle (ICV)
 - Command and Control Vehicle (C2V)
 - Recon and Surveillance Vehicle (R&SV)
 - Mounted Combat System (MCS)
 - Non-Line-of-Sight Mortar (NLOS M)
 - Non-Line-of-Sight Cannon (NLOS C)
 - FCS Medical Treatment & Evacuation Vehicle (MV)
 - FCS Recovery Maintenance Vehicle (FRMV)
 - UAV Class I (Organic Air Vehicle-Light) (UAV CL I)
 - UAV Class II (Organic Air Vehicle-Medium) (UAV CL II)
 - UAV Class III (Small UAV) (UAV CL III)
 - UAV Class IV (Fire Scout) (UAV CL IV GROUND)
 - Armed Robotic Vehicle (ARV) Assault (ASLT)
 - Armed Robotic Vehicle (ARV) Assault Light (ASLT(L))
 - Armed Robotic Vehicle (ARV) Reconnaissance & Surveillance Target & Acquisition (RSTA)
 - Multi-Function Utility/Logistics and Equipment Vehicle (MULE) Countermine
 - Multi-Function Utility/Logistics and Equipment Vehicle (MULE) Transport
 - Small Manpackable Unmanned Ground Vehicle (SUGV)
 - Unattended Ground Sensors (UGS)

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- Non-Line-of-Sight Launch System (NLOS LS) - to include Precision Attack Munition (PAM) and Loitering Attack Munition (LAM)
- Intelligent Munitions System (IMS)
- Mid-Range Munitions (MRM)
- General Fund Enterprise Business System (GFEBS)
- Global Combat Support System - Army (GCSS-A)
- Global Command and Control System - Army (GCCS-A)
- Guided Multiple Launch Rocket System (GMLRS)
- Guided Multiple Launch Rocket System (GMLRS) - Unitary
- High Mobility Artillery Rocket System (HIMARS)
- Integrated System Control (ISYSCON V4)
- Javelin - Advance Anti-Tank Weapon System - Medium
- Joint Land Attack Cruise Missile Defense Elevated Netted Sensors (JLENS)
- Joint Network Transport Capability-Spiral (JNTC-S)
- Joint Tactical Radio System (JTRS) Cluster 1 (JTRS Cluster 1)
- Joint Tactical Radio System (JTRS) Cluster 5 (JTRS Cluster 5)
- Kiowa Warrior (OH-58D)
- Land Warrior
- Light Utility Helicopter
- Line-of-Sight Anti-Tank Missile (LOSAT)
- Longbow Apache (AH-64D) Block III
- Longbow Hellfire Missile (Upgrades/Modifications)
- Maneuver Control System (MCS) Army Tactical Command and Control System (MCS (ATCCS))
- Mobile Tactical High Energy Laser (MTHL)
- PATRIOT/Medium Extended Air Defense System Combined Aggregate Program (PATRIOT/MEADS CAP)
- Precision Guided Mortar Munitions (PGMM)
- Shadow Unmanned Aerial Vehicle (Shadow UAV)
- Single Channel Anti-Jam Man-Portable (SCAMP) (MILSTAR, Block II)
- Single Channel Anti-Jam Man-Portable (SCAMP) System Enhancement Program (SEP)
- Small Unmanned Aerial Vehicle (Raven UAV)
- Stryker - Armored Vehicles
 - Stryker - ATGM Vehicle
 - Stryker - Command Vehicle
 - Stryker - Engineer Squad Vehicle
 - Stryker - Fire Support Vehicle

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- Stryker - Infantry Carrier Vehicle
- Stryker - Medical Evacuation Vehicle
- Stryker - Mobile Gun System
- Stryker - Mounted Mortar Carrier
- Stryker - Nuclear, Biological, Chemical Reconnaissance Vehicle
- Stryker - Reconnaissance/Surveillance Vehicle-Surface-Launched AMRAAM (SLAMRAAM) Missile
- Suite of Integrated Radio Frequency Countermeasures (SIRFC) (AN/ALQ-211)
- Transportation Coordinators' Automated Information for Movements System II (TC-AIMS II)
- Visual Information Support (VIS)
- Warfighter Information Network-Tactical (WIN-T)
- XM8 5.56mm Modular Assault Weapon System
- XM25 25mm Airburst Weapon System
- XM29 Integrated Air Burst Weapon System (formerly the OICWS)
- XM307 Objective Crew Served Weapon System (OCSWS)
- Navy Programs:
 - Acoustic Rapid COTS Insertion for SONAR
 - Active Electronically Scanned Array (AESA)
 - AGM-88E Advanced Anti-Radiation Guided Missile (AARGM) Program
 - Advanced Deployable System (ADS)
 - Advanced Seal Delivery System (ASDS)
 - AIM-9X - Air-to-Air Missile Upgrade
 - Airborne Mine Neutralization System (AMNS)
 - Air Early Warning (AEW)
 - AN/AAR-47 V2 Upgrade Missile/Laser Warning Receiver
 - AN/ALR-67 Advanced Special Receiver (ASR) V2 & V3
 - AN/APR-39A V2 Radar Warning Receiver
 - AN/SPY-1 B/D (All Versions)
 - AN/WSQ-11 Countermeasure Anti-Torpedo
 - Ballistic Missile Technical Collection (BMTC)
 - Broad Area Maritime Surveillance (BAMS)
 - Heavy Lift Replacement (HLR) Helicopter (CH-53X Upgrade to USMC H-53 Program)
 - Cooperative Engagement Capability (CEC)
 - Cobra Judy Replacement (CJR) - Ship-based radar system
 - CVN-68 - *Nimitz* CLASS Nuclear Powered Aircraft Carriers
 - CVN-21 - Next Generation Nuclear Attack Carrier

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- DDG-51 Guided Missile Destroyer
- DD(X) Future Surface Combatant (including Long-Range Land Attack Projectile)
- Defense Integrated Military Human Resources System (DIMHRS)
- Deployable Joint Command and Control (DJC2)
- E-2C Advanced Hawkeye (E2C Radar Modernization Program (RMP))
- E-2C Reproduction Hawkeye
- EA-6B Improved Capabilities (ICAP) III & Multiple Upgrades (Low-Band Transmitter, Band 7-8 Transmitter, USQ-113 Communications Jammer)
- E/A-18G (electronic variant of F/A-18)
- Expeditionary Fighting Vehicle (EFV)
- Evolved Seasparrow Missile (ESSM)
- Extended Range Munition (ERM)
- F/A-18 E/F Hornet Naval Strike Fighter (ALL UPGRADES)
- Fixed Distributed System (FDS)
- Global Command and Control System - Maritime (GCCS-M)
- Global Combat Support System - Marine Corps (GCSS-MC)
- H-1 Upgrades (4BW/4BN)
- Identification Friend or Foe Mark VIIA Mode 5
- Integrated Defensive Electronic Countermeasure (IDECM)
- Integrated Surface Ship ASW Combat System (AN/SQQ-89)
- Joint Mission Planning System (JMPS)
- Joint Standoff Weapon (JSOW) Baseline/Unitary
- KC-130J Aircraft
- LHA(R) - New Amphibious Assault Ship
- LHD-1 Amphibious Assault Ship
- LHD-8 Amphibious Assault Ship
- Littoral Combatant Ship (LCS)
- LPD-17 Amphibious Transport Dock (including 30mm ammunition)
- MH-60R Multi-Mission Helicopter Upgrade
- MH-60S Helicopter (Utility helicopter replacing existing CH-46D, HH-60H, SH-3 & UH-1N helicopters)
- Multi-Functional Information Distribution System - Low Volume Terminal (MIDS-LVT)
- MK-48 Torpedo Mods
- Multi-Mission Maritime Aircraft (MMA)
- Maritime Prepositioning Force (Future) (MPF (F))
- Naval Integrated Fire Control-Counter Air (NIFC-CA)

Exhibit R-2, RDT&E Budget Item Justification

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- Navy Advanced EHF Multi-Band Terminal (NMT)
- Navy Enterprise Resource Planning (ERP) (including Navy Enterprise Maintenance Automated Information System (NEMAIS))
- Navy-Marine Corps Intranet (NMCI)
- Rapid Airborne Mine Clearance System (RAMICS)
- Rolling Airframe Missile (RAM)
- Ship Self Defense System (SSDS)
- Surface Electronic Warfare Improvement Program (SEWIP)
- SSGN *Ohio* Class Conversion
- SSN-21 *Seawolf*/AN/BSY-2
- SSN-774 *Virginia* Class Submarine
- Standard Surface-to-Air Missile 6 (SM-6)
- Standard Missile - 2 (SM-2) (Blocks III/IV)
- Submarine Exterior Communications System (SubECs) (including Common Submarine Radio Room (CSRR))
- T-AKE Lewis & Clark Class of Auxiliary Dry Cargo Ships
- T-AOE(X) (Fast Combatant Support Ship)
- Tactical Control System (TCS)
- Tactical Tomahawk Missile
- Tactical Tomahawk Mission Planning System/Tomahawk Command & Control System (MPS/TCCS)
- Theater Support Vessel/High Speed Connector (TSV/HSV)
- Trident II Missile
- V-22 Osprey Joint Advanced Vertical Lift Aircraft
- Vertical Take-Off Unmanned Aerial Vehicle (VTUAV)
- VXX Presidential Helicopter Fleet Replacement Program
- Air Force Programs:
 - Advance EHF (AEHF)
 - ALR-56M Radar Warning Receiver
 - ALR-69 Radar Warning Receiver
 - Advanced Medium Range Air-to-Air Missile (AMRAAM)
 - Advanced Polar System (APS)
 - Airborne Warning and Control System (AWACS (E-3)) Upgrades
 - Air Operations Center - Weapons System (AOC-WS)
 - B-1B CMUP - B-1 LANCER Penetrating Bomber Conventional Munitions Upgrade Program (CMUP)
 - B-2 Radar Modernization Program (B-2 RMP)
 - B-52 Reengineering Program

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- C-5 Avionics Modernization Program (AMP)
- C-5 Reliability and Reengineering Program (RERP)
- C-17A - Globemaster III Advance Cargo Aircraft
- C-130 AMP - Avionics Modernization Program
- C-130J Hercules Cargo Aircraft (All Variants)
- Combatant Commanders Integrated Command and Control System (CCIC2S)
- Combat Survivor Evader Locator (CSEL)
- Defense Enterprise Accounting Management System (DEAMS)
- Deliberate and Crisis Action Planning and Execution Segments (DCAPES)
- Distributed Common Ground System - Air Force (DCGS-AF) (including Block 10)
- E-4B Modernization Program
- E-10A Multi-Sensor Command and Control Aircraft (MC2A) Program
- EB-52
- Evolved Expendable Launch Vehicle (EELV)
- Family of Beyond Line-of-Sight Terminals (FAB-T)
- F-117 Infra-Red Acquisition and Designation System (IRADS)
- F-15 Tactical Electronic Warfare Suite (TEWS) (AN/ALQ-135 Band 1.5 Fiber-Optic Towed Decoy)
- F/A-22 - Advanced Tactical Fighter
- F-35 Joint Strike Fighter (JSF)
- Financial System Initiative (FSI)
- Global Broadcast Service (GBS)
- Global Combat Support System - Air Force (GCSS-AF)
- Global Command and Control System - Air Force (GCCS-AF)
- Global Hawk High Altitude Endurance Unmanned Aerial Vehicle
- Global Positioning System III (GPS III)
- Global Transportation Network-21 (GTN-21)
- Integrated Strategic Planning and Analysis Network (ISPAN)
- Joint Air-Surface Standoff Missile (JASSM) and JASSM Expanded Response (ER)
- Joint Direct Attack Munition (JDAM)
- Joint Helmet Mounted Cueing System (JHMCS)
- Joint Mission Planning System (JMPS)
- Joint Precision Approach and Landing System (JPALS)
- Joint Primary Aircraft Training System (JPATS)
- Joint Tactical Radio System (JTRS) Cluster Airborne/Maritime/Fixed Site (AMF)
- KC-135 Global Air Traffic Management (GATM) Upgrade

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- KC-135 Recapitalization Program
- Large Aircraft Infrared Countermeasures (LAIRCM)
- MILSTAR - (Satellite Low/Med Data Rate Communications)
- Minuteman III Guidance Replacement Program
- Minuteman III Propulsion Replacement Program
- Multiple Platform - Common Data Link (MP-CDL)
- Multi-Platform Radar Technology Insertion Program (MP-RTIP)
- Mobile User Objective System (MUOS)
- National Airspace System (NAS)
- National Polar-Orbiting Operational Environment Satellite (NPOESS)
- NAVSTAR GPS Global Positioning System
- Navy Extremely High Frequency Satellite Communications (SATCOM) Program (NESP)
- Personnel Recovery Vehicle (PRV)
- Predator Unmanned Aerial Vehicle (UAV) RQ/MQ-1
- Predator B Armed Unmanned Aerial Vehicle (UAV) MQ-9
- Space-Based Infrared System Program High Component (SBIRS-HIGH)
- Space Based Radar (SBR)
- Small Diameter Bomb (SDB)
- Secure Mobile Anti-Jam Reliable Tactical Terminal (SMART-T)
- Tactical Air Control System (TACS)
- Theater Battle Management Core System (TBMCS)
- Transformational SATCOM System (TSAT)
- Ultra High Frequency (UHF) Follow-on Satellite
- Wideband Gapfiller
- Wind Corrected Munitions Dispenser (CBU-103/105)
- Other DoD Programs:
 - Ballistic Missile Defense Program
 - Ground Based Midcourse Defense Segment (includes Ground Based Interceptor (GBI), Ground Based Radar (GBR), and Battle Management C3 (BMC3))
 - AEGIS BMD and SM-3 BLOCK I
 - Space Tracking and Surveillance System (STSS)
 - Theater High-Altitude Area Defense (THAAD)
 - YAL-1 Airborne Laser (ABL)
 - Business System Modernization (BSM)
 - Artemis (Chemical Agent Standoff Detection System)

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- Internet Protocol version 6 (IPv6)
- Joint Biological Agent Identification and Diagnosis System (JBAIDS)
- Joint Biological Point Detection System (JBPDS)
- Joint Biological Stand-Off Detection System (JBSDS)
- Joint Chemical Agent Detector (JCAD)
- Joint Common Missile
- Joint Service Light NBC Reconnaissance System (JSLNBCRS)
- Joint Service Lightweight Standoff Chemical Agent Detector (JSLSCAD)
- Joint Service Sensitive Equipment Decontamination (JSSED)
- Joint Warning and Reporting Network (JWARN)
- Cryptologic Mission Management (CMM)
- Consolidated Advanced Resale Transaction System (CARTS)
- Chemical Demilitarization
- Composite Health Care System II (CHCS II)
- Defense Message System (DMS)
- Defense Travel System (DTS)
- DFAS Corporate Database/Warehouse (DCD/DCW)
- Geoscout Block 1
- Global Information Grid Bandwidth Expansion (GIG-BE)
- Global Command & Control System - Joint (GCCS-J)
- Global Combat Support System COCOM/JTF (GCSS-(CC/JTF))
- Global Electromagnetic Spectrum Analysis System (GEMSAS)
- High Performance Computing Modernization (HPCM)
- Joint Tactical Radio System Waveform (JTRS WAVEFORM)
- Joint Unmanned Combat Air System (JOINT UCAS) (includes AF and Navy UAV programs)
- Journeyman
- Net-Centric Enterprise Services (NCES)
- Key Management Infrastructure (KMI)
- Public Key Infrastructure (PKI)
- Rebuilding Analysis (REBA)
- Teleport
- Theater Medical Information Program (TMIP)
- Trailblazer (TBMMP)

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Information Assurance and Interoperability Evaluations:

- Evaluations were performed in conjunction with approximately 25 Combatant Command and Service Exercises. Full assessment of warfighter responses to computer network attack (ability to protect, detect, react, and restore) was captured in selected events. Portrayal of advanced threats was initiated in selected events. Interoperability metrics and evaluations have matured and are approaching comparable fidelity to information assurance metrics and evaluations. FY 2005 information assurance evaluations included trend analyses compared with FY 2004 results, both within and across Combatant Commands.

FY 2006 Plans:

Key elements of DOT&E's oversight authority, as described under MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION, will be conducted, as applicable, for the following programs:

- Army Programs:
 - ABRAMS Upgrade - Abrams Tank Upgrade
 - Advanced Field Artillery Tactical Data System (AFATDS)
 - Advanced Threat Infrared Countermeasures/Common Missile Warning System (ATIRCM/CMWS)
 - Aerial Common Sensor (ACS)
 - Air and Missile Defense Planning and Control System (AMDPCS)
 - All Source Analysis System (ASAS)
 - AN/TPQ-47 Counterfire Radar
 - Armed Reconnaissance Helicopter (ARH)
 - Anti-Personnel Landmine Alternative (APLA)/Spider
 - Battle Command Sustainment Support System (BCS3)
 - Biometrics
 - Black Hawk Upgrades (UH-60M)
 - Bradley Upgrade - Bradley Fighting Vehicle System Upgrade - A3
 - CH-47F - Cargo Helicopter (CH-47D helicopter upgrade program)
 - Distributed Common Ground System - Army (DCGS-A)
 - Excalibur (Family of Precision 155mm Projectiles)
 - Extended Range/Multipurpose Unmanned Aerial Vehicle (ER/MP UAV)
 - Family of Medium Tactical Vehicles (FMTV)
 - Force XXI Battle Command Brigade & Below (FBCB2) Program
 - Future Cargo Aircraft
 - Future Combat System (FCS) and all associated systems, including:
 - Network Battle Command
 - Infantry Carrier Vehicle (ICV)

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- Command and Control Vehicle (C2V)
- Recon and Surveillance Vehicle (R&SV)
- Mounted Combat System (MCS)
- Non-Line-of-Sight Mortar (NLOS M)
- Non-Line-of-Sight Cannon (NLOS C)
- FCS Medical Treatment & Evacuation Vehicle (MV)
- FCS Recovery Maintenance Vehicle (FRMV)
- UAV Class I (Organic Air Vehicle-Light) (UAV CL I)
- UAV Class II (Organic Air Vehicle-Medium) (UAV CL II)
- UAV Class III (Small UAV) (UAV CL III)
- UAV Class IV (Fire Scout) (UAV CL IV GROUND)
- Armed Robotic Vehicle (ARV) Assault (ASLT)
- Armed Robotic Vehicle (ARV) Assault Light (ASLT(L))
- Armed Robotic Vehicle (ARV) Reconnaissance & Surveillance Target & Acquisition (RSTA)
- Multi-Function Utility/Logistics and Equipment Vehicle (MULE) Countermine
- Multi-Function Utility/Logistics and Equipment Vehicle (MULE) Transport
- Small Manpackable Unmanned Ground Vehicle (SUGV)
- Unattended Ground Sensors (UGS)
- Non-Line-of-Sight Launch System (NLOS LS) - to include Precision Attack Munition (PAM) and Loitering Attack Munition (LAM)
- Intelligent Munitions System (IMS)
- Mid-Range Munitions (MRM)
- General Fund Enterprise Business System (GFEBS)
- Global Combat Support System - Army (GCSS-A)
- Global Command and Control System - Army (GCCS-A)
- Guided Multiple Launch Rocket System (GMLRS)
- Guided Multiple Launch Rocket System (GMLRS) - Unitary
- High Mobility Artillery Rocket System (HIMARS)
- Integrated System Control (ISYSCON V4)
- Javelin - Advance Anti-Tank Weapon System - Medium
- Joint Land Attack Cruise Missile Defense Elevated Netted Sensors (JLENS)
- Joint Network Transport Capability-Spiral (JNTC-S)
- Joint Tactical Radio System (JTRS) Cluster 1 (JTRS Cluster 1)
- Joint Tactical Radio System (JTRS) Cluster 5 (JTRS Cluster 5)
- Kiowa Warrior (OH-58D)

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- Land Warrior
- Light Utility Helicopter
- Line-of-Sight Anti-Tank Missile (LOSAT)
- Longbow Apache (AH-64D) Block III
- Longbow Hellfire Missile (Upgrades/Modifications)
- Maneuver Control System (MCS) Army Tactical Command and Control System (MCS (ATCCS))
- Mobile Tactical High Energy Laser (MTHL)
- PATRIOT/Medium Extended Air Defense System Combined Aggregate Program (PATRIOT/MEADS CAP)
- Precision Guided Mortar Munitions (PGMM)
- Shadow Unmanned Aerial Vehicle (Shadow UAV)
- Single Channel Anti-Jam Man-Portable (SCAMP) (MILSTAR, Block II)
- Single Channel Anti-Jam Man-Portable (SCAMP) System Enhancement Program (SEP)
- Small Unmanned Aerial Vehicle (Raven UAV)
- Stryker - Armored Vehicles
 - Stryker - ATGM Vehicle
 - Stryker - Command Vehicle
 - Stryker - Engineer Squad Vehicle
 - Stryker - Fire Support Vehicle
 - Stryker - Infantry Carrier Vehicle
 - Stryker - Medical Evacuation Vehicle
 - Stryker - Mobile Gun System
 - Stryker - Mounted Mortar Carrier
 - Stryker - Nuclear, Biological, Chemical Reconnaissance Vehicle
 - Stryker - Reconnaissance/Surveillance Vehicle-Surface-Launched AMRAAM (SLAMRAAM) Missile
- Suite of Integrated Radio Frequency Countermeasures (SIRFC) (AN/ALQ-211)
- Transportation Coordinators' Automated Information for Movements System II (TC-AIMS II)
- Visual Information Support (VIS)
- Warfighter Information Network-Tactical (WIN-T)
- XM8 5.56mm Modular Assault Weapon System
- XM25 25mm Airburst Weapon System
- XM29 Integrated Air Burst Weapon System (formerly the OICWS)
- XM307 Objective Crew Served Weapon System (OCSWS)
- Navy Programs:
 - Acoustic Rapid COTS Insertion for SONAR
 - Active Electronically Scanned Array (AESA)

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- AGM-88E Advanced Anti-Radiation Guided Missile (AARGM) Program
- Advanced Deployable System (ADS)
- Advanced Seal Delivery System (ASDS)
- AIM-9X - Air-to-Air Missile Upgrade
- Airborne Mine Neutralization System (AMNS)
- Air Early Warning (AEW)
- AN/AAR-47 V2 Upgrade Missile/Laser Warning Receiver
- AN/ALR-67 Advanced Special Receiver (ASR) V2 & V3
- AN/APR-39A V2 Radar Warning Receiver
- AN/SPY-1 B/D (All Versions)
- AN/WSQ-11 Countermeasure Anti-Torpedo
- Ballistic Missile Technical Collection (BMTC)
- Broad Area Maritime Surveillance (BAMS)
- Heavy Lift Replacement (HLR) Helicopter (CH-53X Upgrade to USMC H-53 Program)
- Cooperative Engagement Capability (CEC)
- Cobra Judy Replacement (CJR) - Ship-based radar system
- CVN-68 - *Nimitz* CLASS Nuclear Powered Aircraft Carriers
- CVN-21 - Next Generation Nuclear Attack Carrier
- DDG-51 Guided Missile Destroyer
- DD(X) Future Surface Combatant (including Long-Range Land Attack Projectile)
- Defense Integrated Military Human Resources System (DIMHRS)
- Deployable Joint Command and Control (DJC2)
- E-2C Advanced Hawkeye (E2C Radar Modernization Program (RMP))
- E-2C Reproduction Hawkeye
- EA-6B Improved Capabilities (ICAP) III & Multiple Upgrades (Low-Band Transmitter, Band 7-8 Transmitter, USQ-113 Communications Jammer)
- E/A-18G (electronic variant of F/A-18)
- Expeditionary Fighting Vehicle (EFV)
- Evolved Seasparrow Missile (ESSM)
- Extended Range Munition (ERM)
- F/A-18 E/F Hornet Naval Strike Fighter (ALL UPGRADES)
- Fixed Distributed System (FDS)
- Global Command and Control System - Maritime (GCCS-M)
- Global Combat Support System - Marine Corps (GCSS-MC)
- H-1 Upgrades (4BW/4BN)

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- Identification Friend or Foe Mark VIIA Mode 5
- Integrated Defensive Electronic Countermeasure (IDECM)
- Integrated Surface Ship ASW Combat System (AN/SQQ-89)
- Joint Mission Planning System (JMPS)
- Joint Standoff Weapon (JSOW) Baseline/Unitary
- KC-130J Aircraft
- LHA(R) - New Amphibious Assault Ship
- LHD-1 Amphibious Assault Ship
- LHD-8 Amphibious Assault Ship
- Littoral Combatant Ship (LCS)
- LPD-17 Amphibious Transport Dock (including 30mm ammunition)
- MH-60R Multi-Mission Helicopter Upgrade
- MH-60S Helicopter (Utility helicopter replacing existing CH-46D, HH-60H, SH-3 & UH-1N helicopters)
- Multi-Functional Information Distribution System - Low Volume Terminal (MIDS-LVT)
- MK-48 Torpedo Mods
- Multi-Mission Maritime Aircraft (MMA)
- Maritime Prepositioning Force (Future) (MPF (F))
- Naval Integrated Fire Control-Counter Air (NIFC-CA)
- Navy Advanced EHF Multi-Band Terminal (NMT) Navy Enterprise Resource Planning (ERP) (including Navy Enterprise Maintenance Automated Information System (NEMAIS))
- Navy-Marine Corps Intranet (NMCI)
- Rapid Airborne Mine Clearance System (RAMICS)
- Rolling Airframe Missile (RAM)
- Ship Self Defense System (SSDS)
- Surface Electronic Warfare Improvement Program (SEWIP)
- SSGN *Ohio* Class Conversion
- SSN-21 *Seawolf*/AN/BSY-2
- SSN-774 *Virginia* Class Submarine
- Standard Surface-to-Air Missile 6 (SM-6)
- Standard Missile - 2 (SM-2) (Blocks III/IV)
- Submarine Exterior Communications System (SubECs) (including Common Submarine Radio Room (CSRR))
- T-AKE Lewis & Clark Class of Auxiliary Dry Cargo Ships
- T-AOE(X) (Fast Combatant Support Ship)
- Tactical Control System (TCS)
- Tactical Tomahawk Missile

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- Tactical Tomahawk Mission Planning System/Tomahawk Command & Control System (MPS/TCCS)
- Theater Support Vessel/High Speed Connector (TSV/HSV)
- Trident II Missile
- V-22 Osprey Joint Advanced Vertical Lift Aircraft
- Vertical Take-Off Unmanned Aerial Vehicle (VTUAV)
- VXX Presidential Helicopter Fleet Replacement Program
- Air Force Programs:
 - Advance EHF (AEHF)
 - ALR-56M Radar Warning Receiver
 - ALR-69 Radar Warning Receiver
 - Advanced Medium Range Air-to-Air Missile (AMRAAM)
 - Advanced Polar System (APS)
 - Airborne Warning and Control System (AWACS (E-3)) Upgrades
 - Air Operations Center - Weapons System (AOC-WS)
 - B-1B CMUP - B-1 LANCER Penetrating Bomber Conventional Munitions Upgrade Program (CMUP)
 - B-2 Radar Modernization Program (B-2 RMP)
 - B-52 Reengineering Program
 - C-5 Avionics Modernization Program (AMP)
 - C-5 Reliability and Reengineering Program (RERP)
 - C-17A - Globemaster III Advance Cargo Aircraft
 - C-130 AMP - Avionics Modernization Program
 - C-130J Hercules Cargo Aircraft (All Variants)
 - Combatant Commanders Integrated Command and Control System (CCIC2S)
 - Combat Survivor Evader Locator (CSEL)
 - Defense Enterprise Accounting Management System (DEAMS)
 - Deliberate and Crisis Action Planning and Execution Segments (DCAPES)
 - Distributed Common Ground System - Air Force (DCGS-AF) (including Block 10)
 - E-4B Modernization Program
 - E-10A Multi-Sensor Command and Control Aircraft (MC2A) Program
 - EB-52
 - Evolved Expendable Launch Vehicle (EELV)
 - Family of Beyond Line-of-Sight Terminals (FAB-T)
 - F-117 Infra-Red Acquisition and Designation System (IRADS)
 - F-15 Tactical Electronic Warfare Suite (TEWS) (AN/ALQ-135 Band 1.5 Fiber-Optic Towed Decoy)
 - F/A-22 - Advanced Tactical Fighter

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- F-35 Joint Strike Fighter (JSF)
- Financial System Initiative (FSI)
- Global Broadcast Service (GBS)
- Global Combat Support System - Air Force (GCSS-AF)
- Global Command and Control System - Air Force (GCCS-AF)
- Global Hawk High Altitude Endurance Unmanned Aerial Vehicle
- Global Positioning System III (GPS III)
- Global Transportation Network-21 (GTN-21)
- Integrated Strategic Planning and Analysis Network (ISPAN)
- Joint Air-Surface Standoff Missile (JASSM) and JASSM Expanded Response (ER)
- Joint Direct Attack Munition (JDAM)
- Joint Helmet Mounted Cueing System (JHMCS)
- Joint Mission Planning System (JMPS)
- Joint Precision Approach and Landing System (JPALS)
- Joint Primary Aircraft Training System (JPATS)
- Joint Tactical Radio System (JTRS) Cluster Airborne/Maritime/Fixed Site (AMF)
- KC-135 Global Air Traffic Management (GATM) Upgrade
- KC-135 Recapitalization Program
- Large Aircraft Infrared Countermeasures (LAIRCM)
- MILSTAR - (Satellite Low/Med Data Rate Communications)
- Minuteman III Guidance Replacement Program
- Minuteman III Propulsion Replacement Program
- Multiple Platform - Common Data Link (MP-CDL)
- Multi-Platform Radar Technology Insertion Program (MP-RTIP)
- Mobile User Objective System (MUOS)
- National Airspace System (NAS)
- National Polar-Orbiting Operational Environment Satellite (NPOESS)
- NAVSTAR Global Positioning System
- Navy Extremely High Frequency Satellite Communications (SATCOM) Program (NESP)
- Personnel Recovery Vehicle (PRV)
- Predator Unmanned Aerial Vehicle (UAV) RQ/MQ-1
- Predator B Armed Unmanned Aerial Vehicle (UAV) MQ-9
- Space-Based Infrared System Program High Component (SBIRS-HIGH)
- Space Based Radar (SBR)
- Small Diameter Bomb (SDB)

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- Secure Mobile Anti-Jam Reliable Tactical Terminal (SMART-T)
- Tactical Air Control System (TACS)
- Theater Battle Management Core System (TBMCS)
- Transformational SATCOM System (TSAT)
- Ultra High Frequency (UHF) Follow-on Satellite
- Wideband Gapfiller
- Wind Corrected Munitions Dispenser (CBU-103/105)
- Other DoD Programs:
 - Ballistic Missile Defense Program
 - Ground Based Midcourse Defense Segment (includes Ground Based Interceptor (GBI), Ground Based Radar (GBR), and Battle Management C3 (BMC3))
 - AEGIS BMD and SM-3 BLOCK I
 - Space Tracking and Surveillance System (STSS)
 - Theater High-Altitude Area Defense (THAAD)
 - YAL-1 Airborne Laser (ABL)
 - Business System Modernization (BSM)
 - Artemis (Chemical Agent Standoff Detection System)
 - Internet Protocol version 6 (IPv6)
 - Joint Biological Agent Identification and Diagnosis System (JBAIDS)
 - Joint Biological Point Detection System (JBPDs)
 - Joint Biological Stand-Off Detection System (JBSDS)
 - Joint Chemical Agent Detector (JCAD)
 - Joint Common Missile
 - Joint Service Light NBC Reconnaissance System (JSLNBCRS)
 - Joint Service Lightweight Standoff Chemical Agent Detector (JSLSCAD)
 - Joint Service Sensitive Equipment Decontamination (JSSED)
 - Joint Warning and Reporting Network (JWARN)
 - Cryptologic Mission Management (CMM)
 - Consolidated Advanced Resale Transaction System (CARTS)
 - Chemical Demilitarization
 - Composite Health Care System II (CHCS II)
 - Defense Message System (DMS)
 - Defense Travel System (DTS)
 - DFAS Corporate Database/Warehouse (DCD/DCW)
 - Geoscout Block 1

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- Global Information Grid Bandwidth Expansion (GIG-BE)
- Global Command & Control System - Joint (GCCS-J)
- Global Combat Support System COCOM/JTF (GCSS-(CC/JTF))
- Global Electromagnetic Spectrum Analysis System (GEMSAS)
- High Performance Computing Modernization (HPCM)
- Joint Tactical Radio System Waveform (JTRS WAVEFORM)
- Joint Unmanned Combat Air System (JOINT UCAS) (includes AF and Navy UAV programs)
- Journeyman
- Net-Centric Enterprise Services (NCES)
- Key Management Infrastructure (KMI)
- Public Key Infrastructure (PKI)
- Rebuilding Analysis (REBA)
- Teleport
- Theater Medical Information Program (TMIP)
- Trailblazer (TBMMP)

Information Assurance and Interoperability Evaluations:

- Will continue to execute and expand this effort across approximately 30 Combatant Command and Service Exercises. Full assessment of warfighter responses to computer network attack (ability to protect, detect, react, and restore) will be captured in most events. Portrayal of advanced threats will be included in most events, and evaluation support to development of enhanced defensive tactics, techniques, and procedures will be provided. FY 2006 information assurance evaluations will include trend analyses compared with FY 2004 and FY 2005 results, both within and across Combatant Commands. Interoperability evaluation trends will be identified.

FY 2007 Plans:

Key elements of DOT&E's oversight authority, as described under MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION, will be conducted, as applicable, for the following programs:

- Army Programs:
 - ABRAMS Upgrade - Abrams Tank Upgrade
 - Advanced Field Artillery Tactical Data System (AFATDS)
 - Advanced Threat Infrared Countermeasures/Common Missile Warning System (ATIRCM/CMWS)
 - Aerial Common Sensor (ACS)
 - Air and Missile Defense Planning and Control System (AMDPCS)
 - All Source Analysis System (ASAS)

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- AN/TPQ-47 Counterfire Radar
- Armed Reconnaissance Helicopter (ARH)
- Anti-Personnel Landmine Alternative (APLA)/Spider
- Battle Command Sustainment Support System (BCS3)
- Biometrics
- Black Hawk Upgrades (UH-60M)
- Bradley Upgrade - Bradley Fighting Vehicle System Upgrade - A3
- CH-47F - Cargo Helicopter (CH-47D helicopter upgrade program)
- Distributed Common Ground System - Army (DCGS-A)
- Excalibur (Family of Precision 155mm Projectiles)
- Extended Range/Multipurpose Unmanned Aerial Vehicle (ER/MP UAV)
- Family of Medium Tactical Vehicles (FMTV)
- Force XXI Battle Command Brigade & Below (FBCB2) Program
- Future Cargo Aircraft
- Future Combat System (FCS) and all associated systems, including:
 - Network Battle Command
 - Infantry Carrier Vehicle (ICV)
 - Command and Control Vehicle (C2V)
 - Recon and Surveillance Vehicle (R&SV)
 - Mounted Combat System (MCS)
 - Non-Line-of-Sight Mortar (NLOS M)
 - Non-Line-of-Sight Cannon (NLOS C)
 - FCS Medical Treatment & Evacuation Vehicle (MV)
 - FCS Recovery Maintenance Vehicle (FRMV)
 - UAV Class I (Organic Air Vehicle-Light) (UAV CL I)
 - UAV Class II (Organic Air Vehicle-Medium) (UAV CL II)
 - UAV Class III (Small UAV) (UAV CL III)
 - UAV Class IV (Fire Scout) (UAV CL IV GROUND)
 - Armed Robotic Vehicle (ARV) Assault (ASLT)
 - Armed Robotic Vehicle (ARV) Assault Light (ASLT(L))
 - Armed Robotic Vehicle (ARV) Reconnaissance & Surveillance Target & Acquisition (RSTA)
 - Multi-Function Utility/Logistics and Equipment Vehicle (MULE) Countermine
 - Multi-Function Utility/Logistics and Equipment Vehicle (MULE) Transport
 - Small Manpackable Unmanned Ground Vehicle (SUGV)
 - Unattended Ground Sensors (UGS)

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- Non-Line-of-Sight Launch System (NLOS LS) - to include Precision Attack Munition (PAM) and Loitering Attack Munition (LAM)
- Intelligent Munitions System (IMS)
- Mid-Range Munitions (MRM)
- General Fund Enterprise Business System (GFEBS)
- Global Combat Support System - Army (GCSS-A)
- Global Command and Control System - Army (GCCS-A)
- Guided Multiple Launch Rocket System (GMLRS)
- Guided Multiple Launch Rocket System (GMLRS) - Unitary
- High Mobility Artillery Rocket System (HIMARS)
- Integrated System Control (ISYSCON V4)
- Javelin - Advance Anti-Tank Weapon System - Medium
- Joint Land Attack Cruise Missile Defense Elevated Netted Sensors (JLENS)
- Joint Network Transport Capability-Spiral (JNTC-S)
- Joint Tactical Radio System (JTRS) Cluster 1 (JTRS Cluster 1)
- Joint Tactical Radio System (JTRS) Cluster 5 (JTRS Cluster 5)
- Kiowa Warrior (OH-58D)
- Land Warrior
- Light Utility Helicopter
- Line-of-Sight Anti-Tank Missile (LOSAT)
- Longbow Apache (AH-64D) Block III
- Longbow Hellfire Missile (Upgrades/Modifications)
- Maneuver Control System (MCS) Army Tactical Command and Control System (MCS (ATCCS))
- Mobile Tactical High Energy Laser (MTHL)
- PATRIOT/Medium Extended Air Defense System Combined Aggregate Program (PATRIOT/MEADS CAP)
- Precision Guided Mortar Munitions (PGMM)
- Shadow Unmanned Aerial Vehicle (Shadow UAV)
- Single Channel Anti-Jam Man-Portable (SCAMP) (MILSTAR, Block II)
- Single Channel Anti-Jam Man-Portable (SCAMP) System Enhancement Program (SEP)
- Small Unmanned Aerial Vehicle (Raven UAV)
- Stryker - Armored Vehicles
 - Stryker - ATGM Vehicle
 - Stryker - Command Vehicle
 - Stryker - Engineer Squad Vehicle
 - Stryker - Fire Support Vehicle

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- Stryker - Infantry Carrier Vehicle
- Stryker - Medical Evacuation Vehicle
- Stryker - Mobile Gun System
- Stryker - Mounted Mortar Carrier
- Stryker - Nuclear, Biological, Chemical Reconnaissance Vehicle
- Stryker - Reconnaissance/Surveillance Vehicle-Surface-Launched AMRAAM (SLAMRAAM) Missile
- Suite of Integrated Radio Frequency Countermeasures (SIRFC) (AN/ALQ-211)
- Transportation Coordinators' Automated Information for Movements System II (TC-AIMS II)
- Visual Information Support (VIS)
- Warfighter Information Network-Tactical (WIN-T)
- XM8 5.56mm Modular Assault Weapon System
- XM25 25mm Airburst Weapon System
- XM29 Integrated Air Burst Weapon System (formerly the OICWS)
- XM307 Objective Crew Served Weapon System (OCSWS)
- Navy Programs:
 - Acoustic Rapid COTS Insertion for SONAR
 - Active Electronically Scanned Array (AESA)
 - AGM-88E Advanced Anti-Radiation Guided Missile (AARGM) Program
 - Advanced Deployable System (ADS)
 - Advanced Seal Delivery System (ASDS)
 - AIM-9X - Air-to-Air Missile Upgrade
 - Airborne Mine Neutralization System (AMNS)
 - Air Early Warning (AEW)
 - AN/AAR-47 V2 Upgrade Missile/Laser Warning Receiver
 - AN/ALR-67 Advanced Special Receiver (ASR) V2 & V3
 - AN/APR-39A V2 Radar Warning Receiver
 - AN/SPY-1 B/D (All Versions)
 - AN/WSQ-11 Countermeasure Anti-Torpedo
 - Ballistic Missile Technical Collection (BMTC)
 - Broad Area Maritime Surveillance (BAMS)
 - Heavy Lift Replacement (HLR) Helicopter (CH-53X Upgrade to USMC H-53 Program)
 - Cooperative Engagement Capability (CEC)
 - Cobra Judy Replacement (CJR) - Ship-based radar system
 - CVN-68 - *Nimitz* CLASS Nuclear Powered Aircraft Carriers
 - CVN-21 - Next Generation Nuclear Attack Carrier

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- DDG-51 Guided Missile Destroyer
- DD(X) Future Surface Combatant (including Long-Range Land Attack Projectile)
- Defense Integrated Military Human Resources System (DIMHRS)
- Deployable Joint Command and Control (DJC2)
- E-2C Advanced Hawkeye (E2C Radar Modernization Program (RMP))
- E-2C Reproduction Hawkeye
- EA-6B Improved Capabilities (ICAP) III & Multiple Upgrades (Low-Band Transmitter, Band 7-8 Transmitter, USQ-113 Communications Jammer)
- E/A-18G (electronic variant of F/A-18)
- Expeditionary Fighting Vehicle (EFV)
- Evolved Seasparrow Missile (ESSM)
- Extended Range Munition (ERM)
- F/A-18 E/F Hornet Naval Strike Fighter (ALL UPGRADES)
- Fixed Distributed System (FDS)
- Global Command and Control System - Maritime (GCCS-M)
- Global Combat Support System - Marine Corps (GCSS-MC)
- H-1 Upgrades (4BW/4BN)
- Identification Friend or Foe Mark VIIA Mode 5
- Integrated Defensive Electronic Countermeasure (IDECM)
- Integrated Surface Ship ASW Combat System (AN/SQQ-89)
- Joint Mission Planning System (JMPS)
- Joint Standoff Weapon (JSOW) Baseline/Unitary
- KC-130J Aircraft
- LHA(R) - New Amphibious Assault Ship
- LHD-1 Amphibious Assault Ship
- LHD-8 Amphibious Assault Ship
- Littoral Combatant Ship (LCS)
- LPD-17 Amphibious Transport Dock (including 30mm ammunition)
- MH-60R Multi-Mission Helicopter Upgrade
- MH-60S Helicopter (Utility helicopter replacing existing CH-46D, HH-60H, SH-3 & UH-1N helicopters)
- Multi-Functional Information Distribution System - Low Volume Terminal (MIDS-LVT)
- MK-48 Torpedo Mods
- Multi-Mission Maritime Aircraft (MMA)
- Maritime Prepositioning Force (Future) (MPF (F))
- Naval Integrated Fire Control-Counter Air (NIFC-CA)

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- Navy Advanced EHF Multi-Band Terminal (NMT)
- Navy Enterprise Resource Planning (ERP) (including Navy Enterprise Maintenance Automated Information System (NEMAIS))
- Navy-Marine Corps Intranet (NMCI)
- Rapid Airborne Mine Clearance System (RAMICS)
- Rolling Airframe Missile (RAM)
- Ship Self Defense System (SSDS)
- Surface Electronic Warfare Improvement Program (SEWIP)
- SSGN *Ohio* Class Conversion
- SSN-21 *Seawolf*/AN/BSY-2
- SSN-774 *Virginia* Class Submarine
- Standard Surface-to-Air Missile 6 (SM-6)
- Standard Missile - 2 (SM-2) (Blocks III/IV)
- Submarine Exterior Communications System (SubECs) (including Common Submarine Radio Room (CSRR))
- T-AKE Lewis & Clark Class of Auxiliary Dry Cargo Ships
- T-AOE(X) (Fast Combatant Support Ship)
- Tactical Control System (TCS)
- Tactical Tomahawk Missile
- Tactical Tomahawk Mission Planning System/Tomahawk Command & Control System (MPS/TCCS)
- Theater Support Vessel/High Speed Connector (TSV/HSV)
- Trident II Missile
- V-22 Osprey Joint Advanced Vertical Lift Aircraft
- Vertical Take-Off Unmanned Aerial Vehicle (VTUAV)
- VXX Presidential Helicopter Fleet Replacement Program
- Air Force Programs:
 - Advance EHF (AEHF)
 - ALR-56M Radar Warning Receiver
 - ALR-69 Radar Warning Receiver
 - Advanced Medium Range Air-to-Air Missile (AMRAAM)
 - Advanced Polar System (APS)
 - Airborne Warning and Control System (AWACS (E-3)) Upgrades
 - Air Operations Center - Weapons System (AOC-WS)
 - B-1B CMUP - B-1 LANCER Penetrating Bomber Conventional Munitions Upgrade Program (CMUP)
 - B-2 Radar Modernization Program (B-2 RMP)
 - B-52 Reengineering Program

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- C-5 Avionics Modernization Program (AMP)
- C-5 Reliability and Reengineering Program (RERP)
- C-17A - Globemaster III Advance Cargo Aircraft
- C-130 AMP - Avionics Modernization Program
- C-130J Hercules Cargo Aircraft (All Variants)
- Combatant Commanders Integrated Command and Control System (CCIC2S)
- Combat Survivor Evader Locator (CSEL)
- Defense Enterprise Accounting Management System (DEAMS)
- Deliberate and Crisis Action Planning and Execution Segments (DCAPES)
- Distributed Common Ground System - Air Force (DCGS-AF) (including Block 10)
- E-4B Modernization Program
- E-10A Multi-Sensor Command and Control Aircraft (MC2A) Program
- EB-52
- Evolved Expendable Launch Vehicle (EELV)
- Family of Beyond Line-of-Sight Terminals (FAB-T)
- F-117 Infra-Red Acquisition and Designation System (IRADS)
- F-15 Tactical Electronic Warfare Suite (TEWS) (AN/ALQ-135 Band 1.5 Fiber-Optic Towed Decoy)
- F/A-22 - Advanced Tactical Fighter
- F-35 Joint Strike Fighter (JSF)
- Financial System Initiative (FSI)
- Global Broadcast Service (GBS)
- Global Combat Support System - Air Force (GCSS-AF)
- Global Command and Control System - Air Force (GCCS-AF)
- Global Hawk High Altitude Endurance Unmanned Aerial Vehicle
- Global Positioning System III (GPS III)
- Global Transportation Network-21 (GTN-21)
- Integrated Strategic Planning and Analysis Network (ISPAN)
- Joint Air-Surface Standoff Missile (JASSM) and JASSM Expanded Response (ER)
- Joint Direct Attack Munition (JDAM)
- Joint Helmet Mounted Cueing System (JHMCS)
- Joint Mission Planning System (JMPS)
- Joint Precision Approach and Landing System (JPALS)
- Joint Primary Aircraft Training System (JPATS)
- Joint Tactical Radio System (JTRS) Cluster Airborne/Maritime/Fixed Site (AMF)
- KC-135 Global Air Traffic Management (GATM) Upgrade

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- KC-135 Recapitalization Program
- Large Aircraft Infrared Countermeasures (LAIRCM)
- MILSTAR - (Satellite Low/Med Data Rate Communications)
- Minuteman III Guidance Replacement Program
- Minuteman III Propulsion Replacement Program
- Multiple Platform - Common Data Link (MP-CDL)
- Multi-Platform Radar Technology Insertion Program (MP-RTIP)
- Mobile User Objective System (MUOS)
- National Airspace System (NAS)
- National Polar-Orbiting Operational Environment Satellite (NPOESS)
- NAVSTAR Global Positioning System
- Navy Extremely High Frequency Satellite Communications (SATCOM) Program (NESP)
- Personnel Recovery Vehicle (PRV)
- Predator Unmanned Aerial Vehicle (UAV) RQ/MQ-1
- Predator B Armed Unmanned Aerial Vehicle (UAV) MQ-9
- Space-Based Infrared System Program High Component (SBIRS-HIGH)
- Space Based Radar (SBR)
- Small Diameter Bomb (SDB)
- Secure Mobile Anti-Jam Reliable Tactical Terminal (SMART-T)
- Tactical Air Control System (TACS)
- Theater Battle Management Core System (TBMCS)
- Transformational SATCOM System (TSAT)
- Ultra High Frequency (UHF) Follow-on Satellite
- Wideband Gapfiller
- Wind Corrected Munitions Dispenser (CBU-103/105)
- Other DoD Programs:
 - Ballistic Missile Defense Program
 - Ground Based Midcourse Defense Segment (includes Ground Based Interceptor (GBI), Ground Based Radar (GBR), and Battle Management C3 (BMC3))
 - AEGIS BMD and SM-3 BLOCK I
 - Space Tracking and Surveillance System (STSS)
 - Theater High-Altitude Area Defense (THAAD)
 - YAL-1 Airborne Laser (ABL)
 - Business System Modernization (BSM)
 - Artemis (Chemical Agent Standoff Detection System)

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- Internet Protocol version 6 (IPv6)
- Joint Biological Agent Identification and Diagnosis System (JBAIDS)
- Joint Biological Point Detection System (JBPDS)
- Joint Biological Stand-Off Detection System (JBSDS)
- Joint Chemical Agent Detector (JCAD)
- Joint Common Missile
- Joint Service Light NBC Reconnaissance System (JSLNBCRS)
- Joint Service Lightweight Standoff Chemical Agent Detector (JSLSCAD)
- Joint Service Sensitive Equipment Decontamination (JSSED)
- Joint Warning and Reporting Network (JWARN)
- Cryptologic Mission Management (CMM)
- Consolidated Advanced Resale Transaction System (CARTS)
- Chemical Demilitarization
- Composite Health Care System II (CHCS II)
- Defense Message System (DMS)
- Defense Travel System (DTS)
- DFAS Corporate Database/Warehouse (DCD/DCW)
- Geoscout Block 1
- Global Information Grid Bandwidth Expansion (GIG-BE)
- Global Command & Control System - Joint (GCCS-J)
- Global Combat Support System COCOM/JTF (GCSS-(CC/JTF))
- Global Electromagnetic Spectrum Analysis System (GEMSAS)
- High Performance Computing Modernization (HPCM)
- Joint Tactical Radio System Waveform (JTRS WAVEFORM)
- Joint Unmanned Combat Air System (JOINT UCAS) (includes AF and Navy UAV programs)
- Journeyman
- Net-Centric Enterprise Services (NCES)
- Key Management Infrastructure (KMI)
- Public Key Infrastructure (PKI)
- Rebuilding Analysis (REBA)Teleport
- Theater Medical Information Program (TMIP)
- Trailblazer (TBMMP)

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Information Assurance and Interoperability Evaluations:

- Will continue to execute and expand this effort across approximately 35 Combatant Command and Service Exercises. Full assessment of warfighter responses to computer network attack (ability to protect, detect, react, and restore) will be captured in all events. Portrayal of advanced threats will be included in all events, and extensive stressing of defensive tactics, techniques, and procedures is expected. FY 2007 information assurance evaluations will include trend analyses compared with FY 2004, 2005, and FY 2006 results, both within and across Combatant Commands. Interoperability evaluation trends will also be identified.

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B. (U) PROGRAM CHANGE SUMMARY

(\$ in Millions)	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
FY 2005 President's Budget	37.006	42.390	44.142	47.843
FY 2006 President's Budget	37.675	43.192	43.928	47.577
Total Adjustments	0.669	.802	(.214)	(.266)
Congressional program reductions		(.998)		
Congressional rescissions				
Congressional increases				
Fiscal guidance adjustment			(.214)	(.266)
Inflation adjustment				
Reprogramming	0.669 ¹	1.800 ¹		

Notes:

1. Reprogramming from 0605804D to PE 0605118D.

C. (U) OTHER PROGRAM FUNDING NA

D. (U) ACQUISITION STRATEGY NA

E. (U) PERFORMANCE METRICS

Percentage of required operational test planning documents, assessments, and reports applicable to acquisition programs on the OSD Test and Evaluation Oversight List and other special interest programs/legacy systems that are completed and delivered to the appropriate decision makers on time.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2)				February 2005				
OPERATIONAL TEST AND EVALUATION, DEFENSE (0460) BUDGET ACTIVITY SIX		LIVE FIRE TESTING (LFT) PROGRAM ELEMENT (PE) 0605131D8Z						
\$ in Millions	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
PE 0605131D	11.721	11.110	10.340	10.487	10.696	10.912	11.145	11.384

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION

This PE directly supports the Congressional statutory requirements for oversight of Live Fire Test and Evaluation (LFT&E). The primary objective of LFT&E is to assure that the vulnerability and survivability of Department of Defense (DoD) crew-carrying weapons platforms and the lethality of our conventional munitions are known and acceptable before entering full-rate production. LFT&E encompasses realistic tests involving actual United States (U.S.) and foreign hardware or, if not available, acceptable surrogate threat hardware. The objective is to identify and correct design deficiencies early in the development process. A completed LFT&E test report is required before weapons programs proceed beyond low-rate initial production. It also includes realistic modeling and simulation (M&S) to assure the maximum benefit from the testing. The LFT&E program is essential, especially in view of the escalating costs of technologically sophisticated weapons systems.

The LFT PE also supports DoD's Joint Live Fire (JLF) Program. JLF was begun in 1984 under an OSD charter to test fielded front-line U.S. and threat combat aircraft and armor systems for their vulnerabilities and fielded weapons, both U.S. and threat, for their lethalties against their respective targets. The Congress, seeing the vulnerability and lethality issues raised by the JLF program, decided that there must be legislation to require realistic testing of new systems before they reach the field. Hence the LFT&E Legislation, U.S. Code, Title 10, Section 2366 was passed in 1987. This PE includes funds to obtain Federally Funded Research and Development Center (FFRDC) support in performing the described tasks and funds travel to carry out oversight of the LFT program.

This Research Category 6.5 PE supports LFT&E management activities for the oversight of RDT&E of new systems, as well as RDT&E of fielded systems.

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In the FY 2005 DoD Appropriations Act, the Congress appropriated \$1.0M for joint test and training rapid advanced technology. Projects are funded under this test and training initiative to improve readiness, reduce casualties, and enhance mission success in combat situations.

Program Accomplishments and Plans:

FY 2004 Accomplishments:

Provided LFT&E Reports to support milestone decisions on the following oversight systems:

- Evolved Seasparrow Missile (ESSM)
- Stryker Armored Vehicle
- Joint Air-to-Surface Standoff Missile
- Advanced Seal Delivery System
- AIM-9X Air-to-Air Missile
- Mortar Carrier-B Configuration of Stryker

Major T&E Programs: Worked with Services, providing oversight of Live Fire Test and Evaluation activities on:

- C-5 Reliability and Reengineering Program
- C-17 Globemaster III Advanced Cargo Aircraft
- C-130 Avionics Modernization Program
- C-130J Hercules Cargo Aircraft
- F/A-22 Raptor
- Joint Air-Surface Standoff Missile (JASSM)
- Personnel Recovery Vehicle
- Small Diameter Bomb (SDB)
- Abrams Tank Upgrade
- Army Tactical Missile System-Penetrator
- Army Theater Support Vessel
- Blackhawk (UH-60M) Upgrades
- Bradley Fighting Vehicle System Upgrade
- CH-47F Improved Cargo Helicopter Upgrade
- RAH-66 Comanche Reconnaissance Attack Helicopter
- Excalibur (Family of Precision 155mm projectiles)
- Future Combat System
- Guided Multiple Launch Rocket System

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- Joint Common Missile
- OH-58D Kiowa Warrior
- Line-of-Sight Anti-Tank (LOSAT) Missile
- AH-64D Longbow Apache
- Longbow Hellfire Missile
- Medium Extended Air Defense System
- Mid-Range Munitions
- Patriot Advanced Capability 3 (PAC-3)
- Precision Guided Mortar Munitions
- Stryker Armored Vehicle
- Surface Launched AMRAAM (SLAMRAAM)
- XM8 Lightweight Modular Weapon System
- XM29 Integrated Air Burst Weapon System
- XM307 Objective Crew Served Weapon System
- Advanced Seal Delivery System (ASDS)
- Affordable Weapon System
- AIM-9X Sidewinder Upgrade
- Airborne Mine Neutralization System (AMNS)
- AN/WSQ-11 Countermeasure Anti-Torpedo
- CH-53X Upgrade Program
- Cruiser Conversion
- CVN-21 Next Generations Nuclear Attack Carrier Ship Class
- DDG-51 Guided Missile Destroyer
- DD(X) Future Surface Combatant
- E/A-18G (electronic variant of F/A-18)
- Expeditionary Fighting Vehicle
- Evolved Seasparrow Missile (ESSM)
- Extended Range Active Missile (ERAM)
- Extended Range Guided Munition (ERGM)
- F-35 Joint Strike Fighter
- Joint Standoff Weapon (JSOW) (Baseline, BLU-108, and Unitary variants)
- KC-130J aircraft
- Long-Range Land Attack Projectile
- LHA(R) New Amphibious Assault Ship

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- LHD 8 Amphibious Assault Ship
- Littoral Combatant Ship
- LPD-17 Amphibious Transport Dock
- MH-60R Multi-mission Helicopter Upgrade
- MH-60S Utility Helicopters
- MK-48 ADCAP torpedo
- Multi-mission Maritime Aircraft (MMA)
- Maritime Prepositioning Force (Future)
- Naval Integrated Fire Control-Counter Air
- Rapid Airborne Mine Clearance System (RAMICS)
- Rolling Airframe Missile
- Surface Electronic Warfare Improvement Program
- SSGN *Ohio* Class conversion
- SSN-21 *Seawolf*/AN/BSY-2
- SSN-23 *Jimmy Carter*
- SSN-774 *Virginia* Class Submarine
- Strategic Sealift Program (SSP) Ship Class
- T-AKE *Lewis and Clark* Class of Auxiliary Dry Cargo Ships
- T-AOE(X) Triple Product Station Ships
- Tactical Tomahawk Missile
- USMC H-1 Upgrades (4BW/4BN)
- VXX Presidential Replacement Helicopter Program
- Ballistic Missile Defense Program

JLF Programs: Conducted tests of the:

- AH-1 Vulnerability to Rocket Propelled Grenades
- H-60 Engine Nacelle Ballistic Fire Suppression system
- CH-53 Vulnerability to AAA
- Vulnerability of Close-Air-Support aircraft to 35mm Air Burst Munition
- Predator Systems Vulnerability
- Chinook Fuel Feed Plumbing Armor
- CF-6 Engine Vulnerability to MANPADS
- UH/MH-60 Dry Bay Foam
- Run Dry capability/Ballistic Vulnerability of UH/MH-60 Improved Gear Box

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- Vulnerability of Propellants
- Vulnerability of Lithium-Ion Battery Packs
- Blast Effects on composite panels
- Effects of Low Speed Rod penetration
- Effects of Large Fragment penetration
- Effects of High Obliquity Impact penetration
- Shipboard Fire Hazards
- Ship Shock testing using smaller charges

Reality Fire Fighting Training:

- Provided for further improvements, implementation of training system upgrades, and installation of augmented reality based damage control and training systems based on U.S. Navy training requirements. Initiated evaluation of training benefits of prototype system.

FY 2005 Accomplishments:

Major T&E Programs: Worked with Services, provided oversight of Live Fire Test and Evaluation activities on:

- C-5 Reliability and Reengineering Program
- C-17 Globemaster III Advanced Cargo Aircraft
- C-130 Avionics Modernization Program
- C-130J Hercules Cargo Aircraft
- F/A-22 Raptor
- B-52 Re-Engine Program
- Joint Air-to-Surface Standoff Missile (JASSM)
- Personnel Recovery Vehicle
- Small Diameter Bomb (SDB)
- Armed Reconnaissance Helicopter
- Theater Support Vessel/High Speed Connector (TSV/HSV)
- Blackhawk (UH-60M) Upgrades
- Bradley Fighting Vehicle System Upgrade A3
- CH-47F Improved Cargo Helicopter Upgrade
- Excalibur (Family of Precision 155mm projectiles)
- Future Cargo Aircraft
- Future Combat System

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- Guided Multiple Launch Rocket System
- Joint Common Missile
- OH-58D Kiowa Warrior
- Line-of-Sight Anti-Tank (LOSAT) Missile
- AH-64D Longbow Apache
- Medium Extended Air Defense System
- Mobile Tactical High Energy Laser
- Patriot/MEADS Combined Aggregate Program
- Standard Surface-to-Air Missile (SM-6)
- Precision Guided Mortar Munitions
- Stryker Armored Vehicle
- Surface Launched AMRAAM (SLAMRAAM)
- XM25 25mm Airburst Weapon System
- XM29 Integrated Air Burst Weapon System
- XM307 Objective Crew Served Weapon System
- Anti-personnel Land Mine Alternative (Spider)
- Mobile Tactical High Energy Laser
- Advanced Seal Delivery System (ASDS)
- Affordable Weapon System
- Advance Medium Range Air-to-Air Missile (AMRAAM)
- Airborne Mine Neutralization System (AMNS)
- AN/WSQ-11 Countermeasure Anti-Torpedo
- Heavy Lift Replacement Helicopter Program
- CVN-21 Next Generation Nuclear Attack Carrier Ship Class
- DDG-51 Guided Missile Destroyer
- DD(X) Future Surface Combatant including Long-Range Attack Projectile
- E/A-18G (electronic variant of F/A-18)
- Expeditionary Fighting Vehicle
- Extended Range Munition (ERM)
- F-35 Joint Strike Fighter
- Joint Standoff Weapon (JSOW)
- KC-130J aircraft
- LHA(R) New Amphibious Assault Ship
- LHD 8 Amphibious Assault Ship

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- Littoral Combatant Ship
- LPD-17 Amphibious Transport Dock
- MH-60R Multi-mission Helicopter Upgrade
- MH-60S Utility Helicopters
- Multi-mission Maritime Aircraft (MMA)
- Maritime Prepositioning Force (Future)
- Naval Integrated Fire Control-Counter Air
- Rapid Airborne Mine Clearance System (RAMICS)
- Rolling Airframe Missile Helicopter Aircraft Ship (RAM HAS)
- SSGN *Ohio* Class conversion
- SSN-21 *Seawolf*/AN/BSY-2
- SSN-774 *Virginia* Class Submarine
- T-AKE *Lewis and Clark* Class of Auxiliary Dry Cargo Ships
- T-AOE(X) Fast Combatant Support Ship
- H-1 Upgrades (4BW/4BN)
- VXX Presidential Replacement Helicopter Program
- Ballistic Missile Defense Program
- Theater High Altitude Area Defense (THAAD)
- Airborne Laser (ABL)

JLF Programs: Conducted tests of fielded systems not previously tested under Air, Land, or Sea Joint Live Fire programs to support DOT&E and warfighter data needs. Tests accomplished in FY 2005 included:

- AH-1 Vulnerability to Rocket Propelled Grenades
- CH-53 Vulnerability to AAA
- Vulnerability of Predator Systems
- CF-6 Engine Vulnerability to MANPADS
- UH/MH-60 Dry Bay Foam
- UH/MH-60 Improved Durability Gearbox Run Dry/Ballistic Vulnerability
- Enhanced Powder Panel Validation
- Kiowa Warrior Cockpit Ballistic Vulnerability
- A-10 Dry Bay Foam Verification
- Helicopter Ordnance Vulnerability
- Kiowa Warrior Fuel System Ballistic Vulnerability
- A-10 Aft Fuselage Vulnerability

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- Control Surface Vulnerability to MANPADS
- Apache Ammunition Magazine Vulnerability
- Kiowa Warrior Rotor Control Subsystem Vulnerability
- Military Operations in Urban Terrain Wall Arena Tests
- Improvised Explosive Device Arena Test and Characterization
- Sensor Fuzed Weapon Cold Target Effectiveness
- FATEPEN Validation for High Energy Fragments
- Rocket Propelled Grenade Casing Fragmentation and Blast M&S Support
- Ship Damage Control Readiness Evaluation
- Hydraulic Fluid Hazards Analysis
- Shipboard Space Fire Testing
- Ship Response to Terrorist Attack
- Ship Survivability to ADL Shock
- Survivability of ships built to commercial standards
- Submarine susceptibility to mines

Joint Test and Training Rapid Advanced Capabilities (JTTRAC) Technology Program:

- Provided funding for Warrior Reach project; providing urgent capabilities addressing U.S. Special Operations Command training/rehearsal requirements.

FY 2006 Plans:

Major T&E Programs:

- Complete LFT&E technical assessments for those systems approaching due dates for reporting to Congress.
- Continue oversight of continuing lethality and vulnerability efforts on acquisition programs.

JLF Programs:

- Conduct tests of fielded systems not previously tested under Air, Land, or Sea Joint Live Fire programs to support DOT&E and warfighter data needs.
- Continue tests of foreign systems acquired for exploitation.
- Continue to evaluate foreign targets and munitions.
- Continue to invest in development of technologies that increase test realism.
- Continue to improve data base management tools.

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FY 2007 Plans:

Major T&E Programs:

- Complete LFT&E technical assessments for those systems approaching due dates for reporting to Congress.
- Continue oversight of continuing lethality and vulnerability efforts on acquisition programs.

JLF Programs:

- Conduct tests of fielded systems not previously tested under Air, Land, or Sea Joint Live Fire programs.
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- Continue to evaluate foreign targets and munitions.
- Continue to invest in development of technologies that increase test realism.
- Continue to improve data base management tools.

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B. (U) PROGRAM CHANGE SUMMARY

(\$ in Millions)	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
FY 2005 President's Budget	11.721	10.209	10.390	10.546
FY 2006 President's Budget	11.721	11.110	10.340	10.487
Total Adjustments		.901	(0.050)	(0.059)
Congressional program reductions		(.099)		
Congressional rescissions				
Congressional increases		1.000		
Fiscal Guidance Adjustments			(0.050)	(0.059)
Inflation Adjustment				
Reprogramming				

C. (U) OTHER PROGRAM FUNDING NA

D. (U) ACQUISITION STRATEGY NA

E. (U) PERFORMANCE METRICS

Percentage of required live fire test planning documents, assessments, and reports applicable to acquisition programs on the OSD Test and Evaluation Oversight List and other special interest programs/legacy systems that are completed and delivered to the appropriate decision makers on time.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2)				February 2005				
OPERATIONAL TEST AND EVALUATION, DEFENSE (0460) BUDGET ACTIVITY SIX		DEVELOPMENT TEST AND EVALUATION (DT&E) PROGRAM ELEMENT (PE) 0605804D8Z						
\$ in Millions	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
PE 0605804D	103.712	107.701	114.190	116.672	118.897	122.325	124.945	127.618

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION

This program element consists of two programs: Test and Evaluation (T&E) Programs and T&E Independent Activities.

The T&E programs are continuing efforts that provide management and oversight of Department of Defense (DoD) T&E functions and T&E expertise to the DoD. T&E Programs consist of five activities: Joint Test and Evaluation (JT&E); Threat Systems (TS); Center for Countermeasures (CCM); Joint Technical Coordinating Group for Munitions Effectiveness (JTTCG/ME); and Joint Aircraft Survivability Program (JASP).

JT&E projects are T&E activities conducted in a joint military environment that are process, rather than product, focused. These multi-Service projects, chartered by the Office of the Secretary of Defense (OSD) and coordinated with the Joint Staff and Services, provide improvements in interoperability of Service systems, improvements in technical and operational concepts, solutions to joint operational issues, development and validation of joint test methodologies, and data for validating models, simulations, and test beds. JT&E projects solve relevant warfighter issues in a joint T&E environment and develop and improve joint test capabilities and methodologies.

TS provides OSD policy and oversight to Component threat systems and target developments to ensure increased commonality, minimized duplications, and provide consistent threat representation validation for T&E. TS funds the management and oversight functions for development of common-use threat specifications for threat simulators, threat representative targets, and digital threat models used for T&E; integration of T&E requirements for Foreign Material Acquisition (FMA); DoD validation of threat simulators, threat representative targets, and digital threat models; analysis of advanced threat technology applications for simulators and targets; and technical investigations of new approaches and methods for providing a realistic threat environment for operational testing of United States (U.S.) weapon systems.

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CCM, a Joint Service Countermeasure (CM) T&E Center, conducts analysis, T&E, and assessment of U.S. and Foreign Electro-Optical (EO), Infrared (IR), and Millimeter Wave (MMW) precision guided weapons (PGW) and systems, countermeasures, counter-countermeasures, and warning devices for the Services, T&E Agencies, the Intelligence Community, and Homeland Defense. CCM's staff and CM knowledge base developed over 30 years provide the DoD acquisition community and the warfighting Combatant Commanders with the information and expertise necessary to ensure the survival of U.S. forces on the increasingly hostile modern battlefield.

JTCG/ME was chartered by the Joint Logistics Commanders (JLC) over 30 years ago to serve as DoD's focal point for authenticated non-nuclear munitions effectiveness information (Joint Munitions Effectiveness Manuals (JMEMs)) on all major non-nuclear U.S. weapons. JTCG/ME, under the auspices of the JLCs, authenticates weapons effectiveness data for use in training, systems acquisition, weaponeering, procurement, and combat modeling. JMEMs are used by the Armed Forces of the U.S., NATO, and other allies to plan operational missions, support training and tactics development, and support force-level analyses. JTCG/ME also develops and standardizes methodologies for evaluation of munitions effectiveness and maintains databases for target vulnerability, munitions lethality, and weapon system accuracy. Based on operational lessons learned (Southern/Northern Watch, Enduring Freedom, Iraqi Freedom), Combatant Commands (COCOMs) and Service input, specific weapon-target pairings and methodology voids were identified. These voids were created by the fielding of new weapon systems, evolving threat target sets, and a more stringent operating environment (specifically, the focus on reduced collateral damage). As a result of Joint Staff J8's review and endorsement, the DoD increased the JTCG/ME budget to correct these deficiencies. The FY 2005-2011 funding will develop target geometry models (e.g., surface mobile/fixed, air, hard/deeply buried, and ship targets) and vulnerability data. This data will be combined with weapons characteristics, delivery accuracies, and methodology enhancements to produce effectiveness indices for the specific weapon-target pairings identified by the COCOMs and Services.

The JLC originally chartered JASP in 1971 to serve as DoD's focal point for the joint service community to enhance the non-nuclear combat survivability of aircraft. The Tri-Service Joint Aeronautical Commanders Group (JACG) re-chartered this program, which acts as the DoD focal point for aircraft susceptibility and vulnerability reduction research as well as survivability modeling and simulation (M&S) methodology. JASP is the Executive Agent for the Joint Live Fire Aircraft Program managed by the Live Fire Test office of the Director, Operational Test & Evaluation (DOT&E). JASP also develops and standardizes methodologies for the evaluation of aircraft survivability (susceptibility and vulnerability) to threat weapons.

T&E Independent Activities are the only source of funding for DOT&E studies; analyses; management; and continuing technical support of policy development, decision-making, management, and oversight of the DoD test and evaluation policies, infrastructure and resources; and transformation of test methods and infrastructure to ensure future defense systems provide necessary joint warfighting capabilities. Studies and

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analyses examine the implications and consequences of current and proposed policy, plans, operations, strategies, and budgets and, are essential for the oversight and management of the DOT&E mission. This PE funds travel in support of its activities.

This Research Category 6.5 PE supports management activities for the DOT&E oversight responsibility for T&E and T&E resources.

Program Accomplishments and Plans:

FY 2004 Accomplishments:

T & E Programs:

JT&E:

- Completed the Joint GPS Combat Effectiveness (JGPSCE) test, delivered test products, conducted out briefings, distributed the final reports, and transitioned capabilities.
- Completed the Joint Battle Damage Assessment (JBDA) test, delivered test products, conducted out briefings, distributed the final reports, and transitioned capabilities.
- Completed the Joint Survivability (JSURV) Quick Reaction Test (QRT), conducted out briefings, distributed the final reports, and transitioned test products.
- Continued the Joint Cruise Missile Defense (JCMD) test.
- Continued the Joint Command, Control, Intelligence, Surveillance, and Reconnaissance (JC2ISR) test.
- Continued the Joint UAVs in Time Sensitive Operations (JUAV-TSO) test.
- Continued the Joint Methodology to Assess C4ISR Architecture (JMACA) test.
- Continued the Joint Logistics Planning Enhancement (JLOG-PE) test.
- Continued the Joint Data Link Information Combat Execution (JDICE) test.
- Continued the Joint Urban Fire and Effects (JUFE) Joint Feasibility Study.
- Initiated the Joint Integration and Interoperability of Special Operations (JIISO) test.
- Initiated the Joint Space Control Operations (Negation) (JSCO-(N)) test.
- Initiated the Joint Fires Coordination Measures (JFCM) Joint Feasibility Study.
- Initiated the Joint Shipboard Weapons and Ordnance (JSWORD) Quick Reaction Test (QRT).
- Initiated the Joint Low Altitude Aircraft Survivability (JLAAS) Quick Reaction Test (QRT).
- Initiated JT&E quarterly review of nominations for potential quick reaction tests for conduct from FY 2004 to FY 2005.

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Threat Systems:

- Simulators:
 - Continued to provide the tools to exchange the latest scientific and technological information between T&E and intelligence communities (e.g., Joint Service Surrogate and Advanced Threat Systems Analysis).
 - Continued oversight of Service threat simulator and digital threat model development and validation efforts.
 - Continued technical investigations to identify solutions for effectively representing asymmetric threats to include Chemical, Biological, Radiological, and Nuclear (CBRN); Information Warfare (IW); and terrorism-related threats to Homeland Defense in testing of U.S. weapons systems.
 - Continued threat support to T&E through investigations of current scientific and technical intelligence information for insertion in Service threat representation modeling programs (e.g., IR Surface-to-Air Missile (SAM) Design of Experiments, IR Air-to-Air Missile Engineering Analysis, Infrared Missile Plume Signature, Hybrid Simulator, and Threat 3D Assessment Tool).
 - Continued the cooperative technical research and test bed projects to ensure threat representation (e.g., Seeker Aided Ground Guidance (SAGG) SAM ECM Operational Testing Capability, End-to-End Requirements Study (E2E), Multi-Camera Systems, Threat IR Imagery Commutative Multiplex, and Test Events Model Analysis) adequacy for T&E.
 - Updated the Automated Joint Threat Systems Handbook to maintain inventory of threat representative assets available for the T&E community and distributed CD ROM version 10.1 and 10.1.1 to over 400 users.
 - Updated and maintained the Automated Joint Threat Simulator Handbook — SIPRNET version.
 - Provided 270 threat assessments for DOT&E analysis of programs on OSD's T&E Oversight List.
 - Chaired the DOT&E Threat Representation Validation Report Review Committee (TRVRRC) and reviewed or approved 18 Service-developed threat simulator and digital threat model validation reports on simulated foreign materiel used in T&E.
- Targets:
 - Provided oversight of the Service activities in support of DoD.
 - Conducted studies that will dramatically reduce the cost of targets and/or target presentation cost (e.g., Maximum Efficiency Non-rated Aircraft Engine (MENACE), Alternative Aerial Target Launcher Design, ECM Miniaturization, Advanced Offboard Countermeasures, and Derived Radar Airborne Penetration Enhancement (DRAPE)).
 - Initiated mobile threat representative ground target investment projects. (e.g., Low Cost Lightweight Programmable Target Mover).
 - Conducted studies for improvement on the threat representation and improved scoring capabilities of targets (e.g., Subscale Aerial Target IR Signature Validation, IR Signature Coatings, Asymmetric Threats, Matrix Round Locator, Advanced Antenna, and Torpedo Threat Emulation).
 - Supported year-long OSD Industrial Policy assessment of the domestic industrial base to produce targets.
 - Supported the Defense Science Board Study on Aerial Targets for Service Targets replacement programs.

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- Developed and launched the Target Management Office web based initiative.

CCM:

- CCM tested, analyzed, reported, assessed, and/or otherwise supported over 30 U.S. and foreign PGW systems/components, countermeasures, threat-warning systems, and other activities and programs, as listed below:
 - Air Force:
 - Joint Precision Approach and Landing System (JPALS), Air Force Reserve Air National Guard Training Center (AATC) Comet, Advanced Strategic and Tactical Expendables (ASTE), CV-22, Battlefield Laser Acquisition and Detection System (BLADES), LITENING AT Pod, Sniper XR, and the F-117 Sensor Suite.
 - Army:
 - Joint Common Missile.
 - Navy/Marines:
 - Vertical Takeoff Unmanned Aerial Vehicle (VTUAV), SHIELDS, Expeditionary Fighting Vehicle (EFV), MV-22, Joint Standoff Weapon (JSOW), Shipboard Laser Acquisition System (SBLAS), AH-1W Cobra Signature Reduction, KC-130J, Laser Beam Rider Countermeasure (Starlight) U.S. Navy Airship Program, and Electronic Warfare Integrated System for Small Platforms (EWISSP).
 - Foreign:
 - Foreign Laser System Test (FLST), Night Attack Vision Exploitation (NAVE) -G, Foreign Rangefinder Exploitation and Evaluation (FREE) -G, Foreign Global Positioning System (FGPS), GD-1 Smoke Grenade, Foreign False Target Generator (FFTG), Foreign Laser Guided Missile (FLGM), Foreign Laser Beam Rider - Live Fire (FLBR-LF).
 - M&S:
 - Incorporated IR flare and IR threat missiles into MV-22 and CV-22 models.
 - Developed Laser Beam Rider model.
 - Provided M&S support for several countermeasures field tests.
 - Other:
 - Technical Cooperation Program (TTCP) (Trial KANTO).
 - NATO Trial EMBOW.
 - Continued providing technical and analytical expertise in support of DOT&E assessment tasks.
 - Provided CM inputs for evolving programs, identified by the Service Acquisition PEOs/PMs including:
 - Air Transport Measurements.
 - Aerial Platforms Study.
 - Joint Mobile Infrared Test System (JMITS).

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- CM Warfare Initiative:
 - Coordinated CM Warfare support at the Combatant Command and MAJCOM levels.
 - Participated in operational warfighting exercises and simulations (National Training Center (NTC)), Joint Readiness Training Center (JRTC) Rotations, Desert Talon-1&2, and Combined Joint Task Force Exercise (CJTfEX) 2004.
 - Continued to provide inputs to Joint Interoperability Tasks and operational exercises and simulations.
 - Continued development of software modifications to warfighting models and simulations to reflect EO/IR countermeasures scenarios at the Joint and Component Service level, Joint Conflict and Tactical Simulation (JCATS), and Joint Simulation System (JSIMS).
- Provided support to the Defense Advanced Research Projects Agency (DARPA) Exploitation 3-Dimensional (E3D) Laser Radar (LADAR) program.
- Sensor Week Joint Test Support.
- Man Portable Air Defense System (MANPADS) Operational Test Capability.

JTCG/ME:

- Conducted Configuration Management/VV&A efforts on specific JTCG/ME models (i.e., Joint Service Endgame Model (JSEM), Advanced Joint Effectiveness Model (AJEM), Joint Mean Area of Effectiveness (JMAE), Advanced Ship Analysis Program (ASAP), Penetration Curvilinear 3D Model (PENCRV3D), Smart Target Model Generator (STMG) and Modular Effectiveness/Vulnerability Assessment (MEVA)).
- Reviewed and prioritized Combatant Commander data requirements in support of FY 2005 program build requirements.
- Continued updates of existing JMEM CD-ROMs: JMEM Air-to-Surface Weaponing System (JAWS) v2.3.1, Joint Anti-air Combat Effectiveness – Air Defense (J-ACE-AD) v2.0, Joint Anti-Air Combat Effectiveness - Air Superiority (J-ACE: AS) v3.1, JMEM/Surface-to-Surface Weaponing Effectiveness System (JWES) v3.1, and Target Vulnerability Data Management System (TVDMS) v2.3.
- Continued execution and technical coordination efforts to address Target Vulnerability data generation (e.g., Special Operations) and methodology improvements (e.g., fragment penetration, and target model generation).
- Continued expansion of existing databases to incorporate data for newly fielded weapons (weapon characteristics and delivery accuracies).
- Continued the development of standardized models and methodology for Air-to-Surface, Surface-to-Surface and Anti-air effectiveness calculations (i.e., Windows Version of JMEM Program (WinJMEM)/Compute Module, Target Complex Model (TARCOM), Guided Weapons Trajectory Software (GWTS), Paveway Munitions Planning Tool (PMPT), JMEM Air-to-Surface Trajectory Program (JAT), Ship Target Analysis Tool (STAT), Building Analysis Module (BAM), Hardened Target Module (HTM), Joint Gun Effectiveness Model (JGEM), Joint Anti-Air Model (JAAM) and Joint Smart Weapons Module (JSWM)).
- Continued to reduce CD-ROM update cycles via incremental updates.

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- Continued to work National Disclosure Policy issues relative to JMEM product release for foreign customers and coalition operations - developed/sanitized JMEM products as requested.
- Developed JMEM data for critical Combatant Commander identified systems. Implemented multi-phase approach to develop surrogation mappings, data approximation techniques and detailed vulnerability analyses. Began to ramp up to support the increased rate of data production that will be possible as a result of increased FY 2005 funding.
- Distributed product incremental updates via the classified internet with the Joint Product and Information Access System (JPIAS) (Books-on-line, Automated products, Models, Tri-Service Data, and Support Services to implement Combatant Command Requirements, Joint Service Target Data Standardization Group (JSTDSG) review/approval process and Combatant Command Targets Execution Group (CTEG) management).
- Investigated tri-Service data, methodology and evaluate standards required to assess Information Operations/Computer Network Attack (IO/CNA).
- Released AJEM v2.2 (Integration of improved Fast Air Target Encounter Penetration (FATEPEN), Supporting ASP documentation on CD, Common AJEM/MUVES GUI). Leveraged Joint Live Fire (JLF) test activities to support validation of FATEPEN.

JASP:

- Completed UAV Active Acoustic Cancellation project.
- Completed Imaging Seeker Aim Point project.
- Completed Dry Bay Fire Model Ignition Phase Validation Data Assessment project.
- Continued Development of the Special Material Urban Decoy.
- Continued High Power Wideband Array project.
- Continued Laser Focal Plane Array Effects Modeling for Laser Countermeasures Optimization.
- Continued MANPADS Impact Point Assessment project.
- Continued Bonded Wing Survivability Demonstration project.
- Continued Advanced Survivable Rotorcraft Validation project.
- Continued Rotary Wing Battle Damage Assessment and Repair (BDAR) project.
- Continued MANPADS Damage Effects Modeling project.
- Continued Survivability/Vulnerability Information Analysis Center (SURVIAC) Modeling and Simulation Accreditation Support.
- Continued SURVIAC Model Manager support.
- Continued COVART/FASTGEN Configuration Control Board (CCB) support.
- Continued Dry Bay Fire Model (DBFM)/ Windows Based Fire Model (WINFIRE) enhancements.
- Continued Integrated Survivability Assessment (ISA) Process Development.
- Continued Directed Radar Energy Assessment Model (DREAM) upgrade, verification and validation.
- Continued Imaging Infrared (IIR) Sensor and Laser Effects Model Development.

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- Continued Advanced Low Altitude Radar Model (ALARM) simulation upgrades.
- Continued Joint Survivability Analysis Requirements project.
- Continued Joint Aircraft Survivability Program (JASP) Internet site.
- Continued Joint Combat Assessment Team (JCAT) efforts.
- Continued Publishing the Aircraft Survivability Journal.
- Initiated Common Service Exciter project.
- Initiated Countermeasures Susceptibility of Several New Foreign Threat Infrared (IR) Seekers.
- Initiated Reactive Infrared Suppressor project.
- Initiated Impact of Electronic Limiting on Imaging Seeker Countermeasures project.
- Initiated Low Cost Helicopter Infrared Countermeasures (IRCM) Components for Advanced Threats.
- Initiated Affordable Visible Missile Warning System project.
- Initiated and completed Derivative Soviet MAN-Portable Air Defense System (MANPADS) IRCM project.
- Initiated High-resolution IRCM Measurements project.
- Initiated Millimeter Wave (MMW) Electronic Warfare (EW) Receiver for Stand-in Jammer project.
- Initiated MMW Radar Warning Receiver (RWR) for Unmanned Aerial Vehicles (UAV) project.
- Initiated Strategic Planning for Susceptibility Reduction.
- Initiated and completed Hostile Fire Indication project.
- Initiated Test Plan and Final Report Guide project.
- Initiated Enhanced Powder Panels project.
- Initiated Automatic Engine Fire Suppression System project.
- Initiated Rocket-Propelled Grenade (RPG) Damage Effects Modeling project.
- Initiated Joint Resistance to Hydrodynamic Ram project.
- Initiated Intumescent “Instant Firewall” project.
- Initiated Assessment of Tank Wall Pressures for Enhanced Ram (ERAM) Validation.
- Initiated Investigation of MANPADS Damage Effects on Large Aircraft Engines project.
- Initiated Complex Composite Rotorcraft Structures Survivability project.
- Initiated Follow-on Issues for Weapons Bay Vulnerability Reduction.
- Initiated Aircraft Structure/Flare Bucket Vulnerability project.
- Initiated UAV Vulnerability Reduction Design Guide project.
- Initiated and completed RPG Launch and Detonation Visualization projects.
- Initiated and completed update of Pedigree Gun and Missile Books.
- Initiated Simulink Environment and Tools for Advanced Infrared Seeker Susceptibility Analysis.
- Initiated Computation of Vulnerable Area and Repair Time (COVART)/Fast Generation (FASTGEN) Model Configuration.
- Initiated ISA Demonstration for Multi-Mission Maritime Aircraft (MMA) project.

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- Initiated Enhanced Surface-to-Air Missile Model (ESAMS) Migration project.
- Initiated and completed Fault Tree Visualization and Integration project.
- Initiated and completed Large Aircraft IR Signature Measurements under the Large Aircraft Survivability Initiative (LASI).

T&E Independent Activities:

- Provided analytical support for the Director's role as the principal adviser to the Secretary of Defense and the Under Secretary of Defense for Acquisition, Technology, and Logistics on operational test and evaluation and the principal operational test and evaluation official within the senior management of the Department of Defense.
 - Continued analysis to support promulgation of policies and procedures for the conduct of operational test and evaluation and live fire test and evaluation in the Department of Defense, and analysis relating to the composition of the Major Range and Test Facility Base.
 - Continued analysis to support the provision of guidance to, and consultation with, senior Department of Defense officials with respect to operational test and evaluation resources and facilities in the Department.
 - Continued analysis to support review and recommendations to the Secretary of Defense on all budgetary and financial matters relating to operational test and evaluation, including operational test facilities and equipment.
- Continued analysis to support statutory annual reporting to the Secretary of Defense and the Congress on operational test and evaluation, including comments and recommendations on resources and facilities available for operational test and evaluation and levels of funding made available for operational test and evaluation activities.
- Continued analysis to support compliance with requests from Congress for information relating to operational test and evaluation in the Department of Defense.
- Continued analysis to support the Director's operational test resource requirements for the statutory biennial strategic plan reflecting the needs of the Department with respect to T&E facilities and resources.
- Administrative Support:
 - Procured administrative support to carry out oversight of DOT&E programs.
- Accounting and Financial Management Support:
 - Provided accounting and financial management support to the DOT&E.

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FY 2005 Accomplishments:

T & E Programs:

JT&E:

- Completed JCMD, JC2ISR, and JUAU-TSO joint tests, delivered test products, conducted out briefings, distributed the final reports, and transitioned capabilities.
- Completed JSWORD and JLAAS Quick Reaction Test, delivered test products, conducted out briefings, distributed the final reports, and transitioned capabilities.
- Continued JLOG-PE, JDICE, JIISO, JSCO(N), and JMACA joint tests.
- Continued quick reaction tests directed in FY 2004.
- Reviewed feasibility study results on JUFE and JFCM to determine if projects should be chartered as Joint Tests.
- Conducted JT&E annual review of nominations for potential feasibility studies for conduct in FY 2005 to FY 2006.
- Conducted JT&E quarterly review of nominations for potential quick reaction tests for conduct from FY 2005 to FY 2006.

Threat Systems:

- Simulators:
 - Continued to chair DOT&E Threat Representation Validation Report Review Committee (TRVRRC) to review or approve 12 Service-developed threat simulator and digital threat model validation reports on simulated foreign materiel used in T&E.
 - Continued technical investigations to identify solutions for effectively representing asymmetric threats, to include Chemical, Biological, Radiological, and Nuclear (CBRN); Information Warfare (IW); and terrorism-related threats to Homeland Defense in testing of U.S. weapons systems.
 - Continued the cooperative technical research and test bed projects to ensure threat representation (e.g., Reactive Plume Simulator Study) adequacy for T&E.
 - Continued improvements to threat missile representations used in end-to-end testing of missile warning and countermeasures effectiveness (e.g., Threat Electronic Warfare (EW) Simulation Study).
 - Continued to provide the tools to exchange the latest scientific and technological information between T&E and intelligence communities (e.g., Directed Energy Threat Study, and Advanced Threat Systems Analysis).
 - Conducted technical investigations and identified improvements to threat representations to ensure threat adequacy for multi-spectral sensor fusion T&E environments (Threat Integration into Real Time Casualty Assessment (RTCA)) Study, and Anti-Aircraft Artillery (AAA) J-Band Advanced Technology Simulator ((JBATS) study).

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- Continued threat support to T&E through investigations of current scientific and technical intelligence information for insertion in Service threat representation modeling programs (e.g., IR Air-to-Air Missile Engineering Analysis, Hybrid Simulator, and Threat 3D Assessment Tool).
- Continued oversight of Service threat simulator and digital threat model development and validation efforts (e.g., Threat Simulator Shortfalls Study).
- Updated the Automated Joint Threat Systems Handbook, produced and distributed CD-ROM version 10.2 to over 400 users, and updated and maintained the SIPRNET version.
- Provided 250 threat assessments for DOT&E analysis of programs on OSD's T&E Oversight List.
- Targets:
 - Conducted studies that will reduce the cost of targets and/or target presentation cost (e.g., 3D Enhancement Range Data Studies, Advanced Offboard Countermeasures, and Low-cost Lightweight Programmable Target Mover).
 - Continued technical studies that will lead to improved threat representation of targets (e.g., IR Signature Coating Improvement, Advanced Ground Target Threat System, Low-cost Lightweight Programmable Target Mover, Advanced Antenna, and Torpedo Threat Emulation).
 - Continued ongoing support to the Defense Science Board study of aerial targets.
 - Continued oversight of Service threat representative targets.
 - Updated the Target Management Office Web to include additional program and study information.
 - Conducted research study on foreign target procurement.
 - Conducted studies that will lead to improved scoring capabilities (e.g., Matrix Round Location).
 - Conducted studies that lead to new target capabilities to represent asymmetric threats (e.g., UAV Cessna-like aircraft).

CCM:

- CCM tested, analyzed, reported, or otherwise supported over 30 U.S. and foreign PGW systems/components in a countermeasure environment, as well as CM and threat-warning systems and other activities and programs, as listed below:
 - Air Force:
 - AAR-47 Live Fire, Directed Infrared Countermeasure (DIRCM), AATC A-10/F-16 Force Development Evaluation (FDE), Small Diameter Bomb, CV-22, LITENING-AT Pod, SNIPER XR, F-117 Sensor Suite, Lazarus Operational Assessment, Low Cost Missile Warning, Medusa, and Powered-Low Cost Autonomous Acquisition System (P-LOCAAS).
 - Army:
 - Suite of Integrated Infrared Countermeasures (SIIRCM), C-12 Aircraft Survivability Equipment (ASE), Army Theater Support Vessel (TSV), Future Combat System (FCS), Tactical UAV, Wide Area Munition, Joint Common Missile, Advanced Precision Kill Weapon System (APKWS), and the Armed Reconnaissance Helicopter (ARH).

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- Navy/Marines:
 - Low Altitude Surface-to-Air Missile Countermeasure (LOWALT), VX-9 IR Surface-to-Air Missile (SAM) Tactical Development and Evaluation (TAC D&E), AH-1Z Cobra Night Targeting System (NTS), Vertical Takeoff Unmanned Aerial Vehicle (VTUAV), SHIELDS, Extended Range Guided Munition (ERGM), Tactical Aircraft Directed Infrared Countermeasure (TADIRCM), AH-1W Cobra Signature Reduction, Expeditionary Fighting Vehicle (EFV), AN/AAR-47 Missile/Laser Warning, Starlight, Shipboard Laser Acquisition System/Landing Craft Air Cushion (SBLAS/LCAC), MV-22, Electronic Warfare Integrated System for Small Platforms (EWISSP), and Raven laser warning sensor.
- Foreign:
 - Foreign Laser System Test (FLST), Night Attack Vision Exploitation (NAVE) -G, Foreign Rangefinder Exploitation and Evaluation (FREE) -G, GD-1 smoke grenade, Foreign False Target Generator (FFTG), Foreign Laser Guided Missile (FLGM), Foreign Laser Beam Rider - Live Fire (FLBR-LF).
- M&S:
 - Incorporated IR flare and IR threat missiles into MV-22 and CV-22 models.
- Other:
 - Panels:
 - The Technical Coordination Panel (TTCP).
 - Foreign Material Exploitation Working Group.
 - Precision Strike Association.
 - Threat Simulation Investment Working Group.
 - Joint Aircraft Survivability Program.
 - Air Force Directed Energy Task Force – Laser.
 - Air Force Directed Energy Task Force – High Powered Microwaves.
 - Department of Homeland Security (DHS) Man-Portable Air Defense Systems (MANPADS).
 - Provided CM inputs for evolving programs, identified by the Service Acquisition PEOs/PMs.
 - CM Warfare Initiative:
 - Coordinated CM Warfare support at the Combatant Command and MAJCOM levels.
 - Participated in T&E Task list operational warfighting exercises and simulations.
 - Joint Forces Command/Marine Aviation Weapons and Tactics Squadron-1 (JFCOM/MAWTS-02-05).
 - Marine Aviation Weapons and Tactics Squadron-1 (MAWTS-01-06).
 - Desert Talon 01-05 & 02-05.
 - Continued to provide inputs for EO/IR CM training, equipment, and Joint Interoperability.
 - Continued to develop software modifications to Joint and Component Service level simulations (JCATS, and JSIMS).

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- Prepared draft Joint Precision Guided Weapons Countermeasures Publication.
- Incorporated CM/CCM into Joint Munitions Effectiveness Manuals (JMEM).
- Continued to provide technical and analytical expertise to DOT&E assessment tasks.
- Provided DARPA test, analysis, and assessment support.
- Provided test support to Joint Low Altitude Aircraft Survivability (JLAAS) Quick Reaction Test (QRT) JT&E program.
- Developed the Joint Mobile Infrared Test System (JMITs) missile simulator.

JTCG/ME:

- Developed JMEM data for most critical Combatant Commander identified systems. Continued updates of existing JMEMs CD-ROMs (i.e., JAWS v2.3.2 and v2.4, Joint Anti-Air Combat Effectiveness - Air Superiority (J-ACE: AS) v3.1 and v3.2, JMEM/Surface-to-Surface Weaponing Effectiveness System (JWES) v4.0, and Target Vulnerability Data Management System (TVDMS) v3.0). Continued to reduce CD-ROM update cycles through incremental updates. Continued transition to a Target Oriented JMEM (JMEM Weaponing System (JWS) v1.0.
- Released AJEM Standard Usage Guide (ASUG) for v2.2 and prepared tri-Service approved input files for vulnerability data generation.
- Developed tri-Service vulnerability/lethality methodology for the IO program.
- Developed tri-Service vulnerability/lethality methodology for the Directed Energy Weapons (DEW) program.
- Distributed products via the classified internet with the Joint Product and Information Access System (JPIAS) (Books-on-line, Automated products, Models, Tri-Service Data, and Support services – Combatant Command Requirements, JSTDSG and CTEG).
- Continued the development of standardized models/operational tools and methodology for Air-to-Surface, Surface-to-Surface and Anti-Air effectiveness calculations and conducted Configuration Management (i.e., JSEM, AJEM, JMAE, ASAP, PENCVR3D, MEVA, WinJMEM, TARCOM, GWTS, PMPT, JAT, STAT, BAM, HTM, JGEM, JAAM, Bridge Analysis System (BAS), Joint Gun Effectiveness Model (JGEM), and JSWM).
- Continued expansion of existing databases to incorporate data for newly fielded weapons (i.e., Air-to-Surface, Surface-to-Surface Direct/Indirect Fire, and Anti-Air).
- Continued execution and technical coordination efforts to address CTEG data generation and methodology improvements to include Special Operations Gun Ship, Military Operations in Urban Terrain (MOUT) environment and Rotary Wing Aircraft.
- Continued Combatant Commander data calls in support of FY2006 program build requirements.
- Coordinated with intelligence community (i.e., NGIC, NASIC, MSIC, ONI and DIA) to improve intelligence data collection efforts for Target Geometry Model (TGM) development.
- Continued to engage near-term acquisition programs to support JMEM production at system Initial Operations Capability (IOC) (i.e., bring critical developmental systems into the JMEM process).

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- Continued to work National Disclosure Policy issues relative to JMEM product release for foreign customers and coalition operations.
- The DoD increase (see page 2 of this Descriptive Summary) to the JTCG/ME budget funded the following projects to address critical COCOM and Service requirements:
 - Developed the target geometry model (TGM), generate vulnerability data, and produced JMEM data for approximately 50 high-priority Combatant Command targets (e.g., surface mobile/fixed, air, hard/deeply buried, and ship targets) producing approximately 3000 weapon-target pairings.
 - Continued developing target surrogation techniques.
 - Enhanced collateral damage and above/below ground hardened target methodologies (Fast Assessment Strike Tool-Collateral Damage (FAST-CD), BAM, HTM, and Integrated Munitions Effectiveness Assessment (IMEA)). Leveraging JWAC and DTRA cooperative efforts.
 - Accelerated the move to a capabilities based JMEM, accounting for newly fielded systems employing other than traditional kinetic damage mechanisms.
 - Advanced efforts to provide connectivity to real time planning systems assessing time sensitive targets (i.e., Joint Targeting Toolbox (JTT), Joint Mission Planning System (JMPS), etc.).
 - Developed JMEM training materials to support Service/Joint schools.
 - Monitored technical and funding execution on all FY 2005 projects. Implemented performance measures on all FY 2005 JTCG/ME projects based on the delivery of the final product.

JASP:

- Completed High Power Wideband Array project.
- Completed Laser Focal Plane Array Effects Modeling for Laser Countermeasures Optimization.
- Completed High-Resolution IRCM Measurements project.
- Completed Hostile Fire Indication project.
- Completed MANPADS Impact Point Assessment project.
- Completed Bonded Wing Survivability Demonstration project.
- Completed Advanced Survivable Rotorcraft Validation project.
- Completed MANPADS Damage Effects Modeling project.
- Completed Test Plan and Final Report Guide project.
- Completed Joint Resistance to Hydrodynamic RAM (HRAM) project.
- Completed Intumescent “Instant Firewall” project.
- Completed Assessment of Tank Wall Pressures for Enhanced Ram ERAM Validation.
- Completed Complex Composite Rotorcraft Structures Survivability project.
- Completed Follow-on Issues for Weapons Bay Vulnerability Reduction.

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- Completed Aircraft Structure/Flare Buckets project.
- Completed UAV Vulnerability Reduction Design Guide project.
- Completed ISA project.
- Completed DREAM Upgrade, Verification, and Validation.
- Completed IIR Sensor and Laser Effects Model Development.
- Completed ALARM Simulation Upgrades.
- Continued Special Material Urban Decoy project.
- Continued Common Service Exciter project.
- Continued Countermeasures Susceptibility of Several New Foreign Threat Infrared Seekers.
- Continued Reactive Infrared Suppressor project.
- Continued Impact of Electronic Limiting on Imaging Seeker Countermeasures project.
- Continued Low Cost Helicopter ICRM Components for Advanced Threats.
- Continued Affordable Visible Missile Warning System project.
- Continued MMW EW Receiver for Stand-In Jammer project.
- Continued Miniaturized Countermeasures for UAVs project.
- Continued Rotary Wing BDAR project.
- Continued Investigation of MANPADS Damage Effects on Large Aircraft Engines project.
- Continued SURVIAC M&S Accreditation support.
- Continued SURVIAC Model Manager support.
- Continued COVART/FASTGEN Configuration Control Board support.
- Continued Dry Bay Fire Model/WINFIRE enhancements.
- Continued Simulink Environment and Tools for Advanced Infrared Seeker Susceptibility Analysis.
- Continued Integrated Survivability Assessment (ISA) Demonstration for MMA project.
- Continued ESAMS Migration project.
- Continued the JASP Internet site.
- Continued JCAT efforts.
- Continued Publishing the Aircraft Survivability Magazine.
- Continued Automatic Engine Fire Suppression System project.
- Continued RPG Damage Effects Modeling project.
- Initiated IR Hollow Core Photonic Bandgap Fibers project.
- Initiated RPG Characterization Testing and Modeling Support project.
- Initiated Joint Service Battle Damage Assessment and Repair (BDAR) Capability Improvement Program.
- Initiated UAV Wing Hydrodynamic RAM (HRAM) Mitigation project.
- Initiated Fuel Tank Ullage Vulnerability project.

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- Initiated Hardware Accelerator for Reticle Processing for Infrared Missile Simulations project.
- Initiated and completed Fire Initiation Test and Methodology Development project.
- Initiated and completed Radar Directed Gun Simulation (RADGUNS) Configuration Control Board support.
- Initiated and completed ESAMS Cooperation Assessment Team (ECAT) Wrap-Up and Transition.
- Initiated and completed Fire Prediction Model (FPM) Modularization.
- Initiated JASP Secret Internet Protocol Routing Network (SIPRNET) site.

T&E Independent Activities:

- Continued analytical support for the Director's role as the principal adviser to the Secretary of Defense and the Under Secretary of Defense for Acquisition, Technology, and Logistics on operational test and evaluation and the principal operational test and evaluation official within the senior management of the Department of Defense.
 - Continued analysis to support promulgation of policies and procedures for the conduct of operational test and evaluation and live fire test and evaluation in the Department of Defense, and analysis relating to the composition of the Major Range and Test Facility Base.
 - Continued analysis to support the provision of guidance to, and consultation with, senior Department of Defense officials with respect to operational test and evaluation resources and facilities in the Department.
 - Continued analysis to support review and recommendations to the Secretary of Defense on all budgetary and financial matters relating to operational test and evaluation, including operational test facilities and equipment.
- Continued analysis to support statutory annual reporting to the Secretary of Defense and the Congress on operational test and evaluation, including comments and recommendations on resources and facilities available for operational test and evaluation and levels of funding made available for operational test and evaluation activities.
- Continued analysis to support compliance with requests from Congress for information relating to operational test and evaluation in the Department of Defense.
- Continued analysis to support the Director's operational test resource requirements for the statutory biennial strategic plan reflecting the needs of the Department with respect to T&E facilities and resources.
- Administrative Support:
 - Procured administrative support to carry out oversight of DOT&E programs.
- Accounting and Financial Management Support:
 - Provided accounting and financial management support to the DOT&E.

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FY 2006 Plans:

T & E Programs:

JT&E:

- Continue JSCO(N), JIISO, JUFEE, and/or JFCM joint tests.
- Continue quick reaction tests directed in FY 2005 and 2006.
- Determine which FY 2005 Joint Feasibility Studies will be initiated as Joint Tests and commence testing activities.
- Conduct JT&E annual review of nominations for potential feasibility studies for conduct in FY 2006 to FY 2007.
- Conduct JT&E quarterly review of nominations for potential quick reaction tests for conduct in FY 2006 for FY 2007.
- Complete JDICE, JLOG-PE, and JMACA joint tests, deliver test products, conduct out briefings, distribute the final reports, and transition capabilities.
- Complete FY 2005 Quick Reaction Tests, deliver test products, conduct out briefings, distribute the final reports, and transition capabilities.

Threat Systems:

- Simulators:
 - Continue to chair DOT&E Threat Representation Validation Report Review Committee (TRVRRC) to review or approve 18 Service-developed threat simulator and digital threat model validation reports on simulated foreign materiel used in T&E.
 - Provide 250 threat assessments for DOT&E analysis of programs on OSD's T&E Oversight List.
 - Continue technical investigations to identify solutions for effectively representing asymmetric threats, to include Chemical, Biological, Radiological, and Nuclear (CBRN) threats; Information Warfare (IW); and terrorism-related threats to Homeland Defense in testing of U.S. weapons systems.
 - Continue threat support to T&E through investigations of current scientific and technical intelligence information for insertion in Service threat representation modeling programs.
 - Update the Automated Joint Threat Systems Handbook, produce and distribute CD-ROM version 10.3 to over 425 users, and update and maintain SIPRNET version.
 - Implement common threat missile fly-out models used for T&E (Electronic Warfare (EW) Simulation Module).
 - Conduct technical investigations and identify improvements to threat representations to ensure threat adequacy for multi-spectral sensor fusion T&E environments (e.g., Threat Integration into Real Time Casualty Assessment (RTCA) Study).
 - Continue improvements to threat missile representations used in end-to-end testing of missile warning and countermeasures effectiveness (e.g., IR Stimulator Effectiveness Study versus Imaging Infrared Missile Warning Systems (IR MWS), and Infrared Missile Countermeasure Simulation (IR MCS)).

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- Continue oversight of Service threat simulator and digital threat model development and validation efforts (e.g., Threat Simulator Shortfalls Study).
- Continue the cooperative technical research and test bed projects to ensure threat representation (e.g., Reactive Plume Simulator Study and Improved Advanced Threat Simulator) adequacy in T&E.
- Continue to provide the tools to exchange the latest scientific and technological information between T&E and intelligence communities (e.g., Directed Energy Threat Study).
- Examine the need to provide a threat representative electronic warfare environment (RF&IR) that will support network centric program T&E (e.g., Radio Frequency (RF) Fusing Simulation Study).
- Examine the capabilities needed to execute robust and combined test events in a realistic threat environment with multiple and simultaneous threats for programs (e.g., Integrated Threat Information Operations Laboratory, and Constructive Verification and Validation (V&V) Threat Demonstration).
- Characterize threat simulation capabilities (e.g., System Integration Laboratory/Hardware In The Loop/Installed Systems Test Facility/Open Air Range (SIL/HITL/ISTF/OAR)) needed to test advanced technology Infrared Countermeasures (IRCM) systems and advanced missile systems (e.g., IR Model Converter, Pre-Emptive Infrared IRCM Functionality, and Free-Play Plume Simulator Study).
- Targets:
 - Provide OSD seed funds to prototype solution to highest priority deficiencies in current target systems.
 - Provide oversight of the Service activities in support of DoD.
 - Conduct studies that will reduce the cost of targets and/or target presentation cost (e.g., 3D Enhancement Range Data Study, Mobile Ground Targets, Target Control, Air Superiority Target, MOUT Target Structures, and Low-cost Lightweight Programmable Target Mover).
 - Continue technical studies that will lead to improved threat representation of targets or address operational test target resource issues that were reported within the FY 2005 Defense Science Board report on Aerial Targets (e.g., Threat “D”, Air Superiority Target, and Target Control).
 - Examine ongoing integration of electronic warfare and computer network operations. Examine the use of hardware replica prototypes, actuals and/or simulators along with associated software and electronic systems to facilitate testing capabilities within integrated IO facilities and ranges requiring target support.
 - Continue developments that lead to improved threat representative ground targets (including digital simulations of ground targets) suitable for testing of weapons (air and ground) with multi-mode seekers and/or aerial surveillance/reconnaissance systems used for precision targeting.
 - Continue ongoing examination of improved threat aircraft signature representation (using augmented subscale or full scale aerial targets) for end-to-end testing of advanced air defense missiles.

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- Conduct research to characterize the threat environment needed for testing of large footprint and extended-range weapons and sensors, including beyond-line-of sight targeting, improved methods of hazard area calculations, and remote control/operation of threat lay down.
- Provide portable and in-situ test, threat simulation and stimulation capabilities independent of fixed ranges, to include: range independent over-the-horizon target control and data transfer, embedded instrumentation, new methods for hazard pattern development and IRCM testing in an urban clutter environment.
- Conduct technical studies to address the future target requirements of Directed Energy Weapons.
- Conduct technical Studies that examine potential target solutions to recent changes in intelligence assessments.

CCM:

- CCM will test, analyze, report, and otherwise support over 30 U.S. and foreign PGW systems/components in a countermeasure environment, as well as CM and threat-warning systems and other activities and programs, as listed below:
 - Air Force:
 - AATC A-10/F-16 FDE, Small Diameter Bomb, Large Aircraft Infrared Countermeasure (LAIRCM) Next Generation, Low Cost Missile Warning System, F-117 Sensor Suite, CV-22, LITENING-AT Pod, and Powered-Low Cost Autonomous Acquisition System (P-LOCAAS).
 - Army:
 - Future Combat System (FCS), Tactical UAV, Wide Area Munition, Advanced Precision Kill Weapon System (APKWS), and the Armed Reconnaissance Helicopter (ARH).
 - Navy/Marines:
 - Vertical Takeoff Unmanned Aerial Vehicle (VTUAV), SHIELDS, AH-1W Cobra Night Targeting System (NTS), Tactical Aircraft Directed Infrared Countermeasure (TADIRCM), Expeditionary Fighting Vehicle (EFV), Gunfire and Ordnance Detection System (GODS), AN/AAR-47 v2 Missile/Laser Warning, Laser Beam Rider Missile Countermeasure (Starlight), Shipboard Laser Acquisition System (SBLAS), MV-22, Electronic Warfare Integrated System for Small Surface Platforms (EWISSP), Low Altitude Surface-to-Air Missile Countermeasure (LOWALT), and Rocket Propelled Grenade Countermeasure (RPGCM).
 - Foreign:
 - Foreign False Target Generator, Foreign Laser Guided Munitions, GALIX smoke grenade, MASKE smoke grenade, and FGPS.
 - M&S:
 - CV-22 Test support.
 - Other:
 - Panels:
 - The Technical Coordination Panel (TTCP).

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- Foreign Material Exploitation Working Group.
- Precision Strike Association.
- Threat Simulation Investment Working Group.
- Air Force Directed Energy Task Force – Laser.
- Air Force Directed Energy Task Force – High Powered Microwaves.
- Joint Aircraft Survivability Program.
- Department of Homeland Security (DHS) MANPADS.
- Provide CM inputs for evolving programs, identified by the Service Acquisition PEOs/PMs.
- CM Warfare Initiative:
 - Coordinate CM Warfare support at the Combatant Command and MAJCOM levels.
 - Participate in T&E Task list operational warfighting exercises and simulations.
 - Support MAWTS-1 (2 exercises), JTFEX-06, JNTC CJTFEX, and Victory Strike.
- Continue to provide inputs for EO/IR CM training, equipment, and Joint Interoperability.
- Continue to develop software modifications to Joint and Component Service level simulations (JCATS).
- Subject Matter Organization for selected JCS Universal Joint Task Lists (UJTLs).
- Coordinate Joint PGM Countermeasures Publication.
- Continue to provide technical and analytical expertise to DOT&E assessment tasks.
- Complete development of the Joint Mobile Infrared Test System (JMITS) missile simulator.

JTCG/ME:

- Develop and release JWS v1.x which will contain JMEM/Air-to-Surface, Anti-air, and Surface-to-Surface weapons.
- Develop JMEM data for most critical Combatant Commander identified systems.
- Continue to reduce CD-ROM update cycles through incremental updates.
- Release AJEM v2.x and continue to update AJEM input files for JTCG/ME standard weapons.
- Update and publish 61 JTCG/ME-1-8 “Requirements for Generating, Documenting, Reviewing, and Approving JTCG/ME Vulnerability Data”.
- Continue to develop tri-Service JMEM methodology for the IO program.
- Continue to develop tri-Service JMEM methodology for the Directed Energy Weapons (DEW) program.
- Distribute products via the classified internet with the Joint Product and Information Access System (JPIAS) (Books-on-line, Automated products, Models, Tri-Service Data, and Support services – Combatant Command Requirements, JSTD SG, and CTEG).
- Continue the development of standardized models/operational tools and methodology for Air-to-Surface, Surface-to-Surface and Anti-Air effectiveness calculations and conduct Configuration Management.

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- Continue expansion of existing databases to incorporate data for newly fielded weapons (i.e., Air-to-Surface, Surface-to-Surface Direct/Indirect Fire, and Anti-Air).
- Continue execution and technical coordination efforts to address CTEG data generation and methodology improvements.
- Continue Combatant Commander data calls in support of FY 2007 program build requirements.
- Continue to work with intelligence community (i.e., NGIC, NASIC, MSIC, ONI and DIA) to collect intelligence data for Target Geometry Model (TGM) development.
- Continue to engage near-term acquisition programs to support JMEM production at system IOC.
- Continue to work National Disclosure Policy issues relative to JMEM product release for foreign customers and coalition operations.
- Develop the target geometry model (TGM), generate vulnerability data, and produce JMEM data for approximately 60 high-priority Combatant Command targets (e.g., surface mobile/fixed, air, hard/deeply buried, and ship targets).
- Review and approve tri-Service target surrogation techniques/methodologies to meet JMEM requirements.
- Enhance collateral damage and above/below ground hardened target.
- Implement a capabilities based JMEM, accounting for newly fielded systems employing other than traditional kinetic damage mechanisms.
- Advance efforts to provide connectivity to real time planning systems assessing time sensitive targets (i.e., Joint Targeting Toolbox (JTT), Joint Mission Planning System (JMPS), Advanced Deep Operations Coordination System (ADOCS), Air – Theater Battle Management Core Systems (TBMCS), and Naval Fires Control System (NFCS), etc.
- Conduct on-site JMEM training to Service/Joint course instructors/trainers.
- Continue to monitor technical and funding execution on all FY 2006 projects. Implement performance measures on all FY 2006 JTCG/ME projects based on the delivery of the final product.

JASP:

- Complete Special Material Urban Decoy project.
- Complete Common Service Exciter project.
- Complete Countermeasures Susceptibility of Several New Foreign Threat Infrared Seekers.
- Complete Reactive IR Suppressor project.
- Complete Low Cost Helicopter IRCM Components for Advanced Threats project.
- Complete Affordable Visible Missile Warning System project.
- Complete MMW EW Receiver for Stand-In Jammer project.
- Complete Automatic Engine Fire Suppression System project.
- Complete RPG Damage Effects Modeling project.
- Complete Investigation of MANPADS Damage Effects on Large Aircraft Engines project.
- Complete Joint Service BDAR Capability Improvement program.

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- Complete UAV Wing HRAM Mitigation project.
- Complete Fuel Tank Ullage Vulnerability project.
- Complete Simulink Environment and Tools for Advanced Infrared Seeker Susceptibility Analysis.
- Complete ISA Demonstration for MMA project.
- Complete ESAMS Migration project.
- Complete Hardware Accelerator for Reticle Processing for IR Missile Simulations project.
- Continue Impact of Electronic Limiting on Imaging Seeker Countermeasures project.
- Continue MMW Radar Warning Receiver for UAVs project.
- Continue IR Hollow Core Photonic Bandgap Fibers project.
- Continue Rotary Wing BDAR project.
- Continue SURVIAC Modeling & Simulation (M&S) Accreditation Support.
- Continue SURVIAC Model Manager support.
- Continue COVART/FASTGEN CCB support.
- Continue DBFM/WINFIRE enhancements.
- Continue JASP Internet site.
- Continue JCAT efforts.
- Continue Publishing the Aircraft Survivability Magazine.
- Continue JASP SIPRNET site.
- Initiate other projects as approved for accomplishment by the principal members and OSD.

T&E Independent Activities:

- Continue analytical support for the Director's role as the principal adviser to the Secretary of Defense and the Under Secretary of Defense for Acquisition, Technology, and Logistics on operational test and evaluation and the principal operational test and evaluation official within the senior management of the Department of Defense.
 - Continue analysis to support promulgation of policies and procedures for the conduct of operational test and evaluation and live fire test and evaluation in the Department of Defense, and analysis relating to the composition of the Major Range and Test Facility Base.
 - Continue analysis to support the provision of guidance to, and consultation with, senior Department of Defense officials with respect to operational test and evaluation resources and facilities in the Department.
 - Continue analysis to support review and recommendations to the Secretary of Defense on all budgetary and financial matters relating to operational test and evaluation, including operational test facilities and equipment.

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- Continue analysis to support statutory annual reporting to the Secretary of Defense and the Congress on operational test and evaluation, including comments and recommendations on resources and facilities available for operational test and evaluation and levels of funding made available for operational test and evaluation activities.
- Continue analysis to support compliance with requests from Congress for information relating to operational test and evaluation in the Department of Defense.
- Continued analysis to support the Director's operational test resource requirements for the statutory biennial strategic plan reflecting the needs of the Department with respect to T&E facilities and resources.
- Administrative Support:
 - Procure administrative support to carry out oversight of DOT&E programs.
- Accounting and Financial Management Support:
 - Provide accounting and financial management support to the DOT&E.

FY 2007 Plans:

T & E Programs:

JT&E:

- Complete JIISO and JSCO(N) Tests, deliver test products, conduct out briefings, distribute the final reports, and transition capabilities.
- Complete FY 2006 Quick Reaction Tests, deliver test products, conduct out briefings, distribute the final reports, and transition capabilities.
- Continue joint tests chartered in FY 2005 and 2006.
- Continue quick reaction tests directed in FY 2006 and 2007.
- Determine which FY 2005 Joint Feasibility Studies will be initiated as Joint Tests and commence testing activities.
- Conduct JT&E annual review of nominations for potential feasibility studies for conduct in FY 2007 to FY 2008.
- Conduct JT&E quarterly review of nominations for potential quick reaction tests for conduct from FY 2007 for FY 2008.

Threat Systems:

- Simulators:
 - Continue to chair DOT&E Threat Representation Validation Report Review Committee (TRVRRC) to review or approve 18 Service developed threat simulator and digital threat model validation reports on simulated foreign materiel used in T&E.
 - Provide 250 threat assessments for DOT&E analysis of programs on OSD's T&E Oversight List.

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- Continue technical investigations to identify solutions for effectively representing asymmetric threats, to include Chemical, Biological, Radiological, and Nuclear (CBRN); Information Warfare (IW); and terrorism-related threats to Homeland Defense in testing of U.S. weapons systems.
- Continue threat support to T&E through investigations of current scientific and technical intelligence information for insertion in Service threat representation modeling programs.
- Update the Automated Joint Threat Systems Handbook, produce and distribute CD-ROM version 10.4 to over 425 users, and update and maintain the SIPRNET version.
- Implement common threat missile fly-out models used for T&E (Electronic Warfare (EW) Simulation Module).
- Conduct technical investigations and identify improvements to threat representations to ensure threat adequacy for multi-spectral sensor fusion T&E environments (Threat Integration into Real Time Casualty Assessment (RTCA) Study, and Anti-Aircraft Artillery (AAA) J-Band Advanced Technology Simulator (JBATS) study).
- Continue improvements to threat missile representations used in end-to-end testing of missile warning and countermeasures effectiveness (e.g., IR Stimulator Effectiveness Study versus Imaging Infrared Missile Warning Systems (IR MWS), Infrared Missile Countermeasure Simulation (IR MCS), and Electronic Warfare (EW) Simulation Study).
- Continue oversight of Service threat simulator and digital threat model development and validation efforts.
- Continue the cooperative technical research and test bed projects to ensure threat representation adequacy in T&E.
- Continue to provide the tools to exchange the latest scientific and technological information between T&E and intelligence communities (e.g., Advanced Threat Systems Analysis).
- Examine the need to provide a threat representative electronic warfare environment (RF&IR) that will support network centric program T&E (e.g., Radio Frequency (RF) Fusing Simulation Study).
- Examine the capabilities needed to execute robust and combined test events in a realistic threat environment with multiple and simultaneous threats for programs (e.g., Integrated Threat Information Operations Laboratory, and Constructive V&V Threat Demonstration).
- Characterize threat simulation capabilities (e.g., SIL/HITL/ISTF/OAR) needed to test advanced technology Infrared Countermeasures (IRCM) systems and advanced missile systems (e.g., IR Model Converter, Pre-Emptive IRCM Functionality and Free-Play Plume Simulator Study).
- Targets:
 - Provide OSD seed funds to prototype solution to highest priority deficiencies in current target systems.
 - Provide oversight of the Service activities in support of DoD.
 - Continue technical studies that will lead to improved threat representation of targets or address operational test target resource issues that were reported within the FY 2005 Defense Science Board report on Aerial Targets.
 - Conduct technical studies to address the future target requirements of Directed Energy Weapons.

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- Examine the ongoing integration of electronic warfare and computer network operations. Examine the use of hardware replica prototypes, actuals and/or simulators along with associated software and electronic systems to facilitate testing capabilities within integrated IO facilities and ranges requiring target support.
- Conduct developments that lead to improved threat representative ground targets (including digital simulations of ground targets) suitable for testing of weapons (air and ground) with multi-mode seekers and/or aerial surveillance/reconnaissance systems used for precision targeting.
- Continue ongoing examination of improved threat aircraft signature representation (using augmented subscale or full scale aerial targets) for end-to-end testing of advanced air defense missiles.
- Conduct research to characterize the threat environment needed for testing of large footprint and extended-range weapons and sensors, including beyond-line-of sight targeting, improved methods of hazard area calculations, and remote control/operation of threat lay down.
- Provide portable and in-situ test, threat simulation and stimulation capabilities independent of fixed ranges to include: range independent over-the-horizon target control and data transfer, embedded instrumentation, new methods for hazard pattern development and IRCM testing in an urban clutter environment.

CCM:

- CCM will test, analyze, report, and otherwise support over 30 U.S. and foreign PGW systems/components in a countermeasure environment, as well as CM and threat-warning systems and other activities and programs, as listed below:
 - Air Force:
 - AATC A-10/F-16 FDE, Small Diameter Bomb, CV-22, LITENING-AT Pod, Low Cost Missile Warning System, and Powered-Low Cost Autonomous Acquisition System (P-LOCAAS).
 - Army:
 - Future Combat System, Tactical UAV, Wide Area Munition, and AN/AVR-2B.
 - Navy/Marines:
 - Vertical Takeoff Unmanned Aerial Vehicle (VTUAV), SHIELDS, Tactical Aircraft Directed Infrared Countermeasure (TADIRCM), Expeditionary Fighting Vehicle (EFV), Gunfire and Ordnance Detection System (GODS), Electronic Warfare Integrated System for Small Surface Platforms (EWISSP), Laser Beam Rider Missile Countermeasure (Starlight), Shipboard Laser Acquisition System (SBLAS), Airport Defense System (ADS), Joint Strike Fighter (F-35), Joint Unmanned Combat Air Vehicle (J-UCAV).
 - Foreign:
 - FGPS, Foreign Laser Guided Projectiles (FLGP), and Foreign Precision Guided Munition B (FPGM-B).
 - M&S:
 - CV-22 test support.

Exhibit R-2, RDT&E Budget Item Justification

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- Other:
 - Panels:
 - The Technical Coordination Panel (TTCP).
 - Foreign Material Exploitation Working Group.
 - Precision Strike Association.
 - Threat Simulation Investment Working Group.
 - Air Force Directed Energy Task Force – Laser.
 - Air Force Directed Energy Task Force – High Powered Microwaves.
 - Joint Aircraft Survivability Program.
 - Provide CM inputs for evolving programs, identified by the Service Acquisition PEOs/PMs.
 - CM Warfare Initiative:
 - Coordinate CM Warfare support at the Combatant Command and MAJCOM levels.
 - Participate in T&E Task list operational warfighting exercises and simulations.
 - Support MAWTS-1 (2 exercises), and JNTC Integration (overseas & west).
 - Continue to provide inputs for EO/IR CM training, equipment, and Joint Interoperability.
 - Continue to develop software modifications to Joint and Component Service level simulations (JCATS and JSIMS).
- Continue to provide technical and analytical expertise to DOT&E assessment tasks.

JTCG/ME:

- Develop and release JWS v2.0 which will contain JMEM/Air-to-Surface, Anti-air, and Surface-to-Surface weapons.
- Continue to develop JMEM data for most critical Combatant Commander identified systems.
- Continue to reduce CD-ROM update cycles through incremental updates.
- Implement tri-Service JMEM methodology for the IO program.
- Implement tri-Service JMEM methodology for the Directed Energy Weapons (DEW) program.
- Distribute products via the classified internet with the Joint Product and Information Access System (JPIAS) (Books-on-line, Automated products, Models, Tri-Service Data, and Support services).
- Continue the development of standardized models/operational tools and methodology for Air-to-Surface, Surface-to-Surface and Anti-Air effectiveness calculations and conduct Configuration Management.
- Continue expansion of existing databases to incorporate data for newly fielded weapons (i.e., Air-to-Surface, Surface-to-Surface Direct/Indirect Fire, and Anti-Air).
- Continue execution and technical coordination efforts to address CTEG data generation and methodology improvements.
- Continue Combatant Commander data calls in support of FY 2008 program build requirements.

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- Continue to work with intelligence community (i.e., NGIC, NASIC, MSIC, ONI and DIA) to collect intelligence data for Target Geometry Model (TGM) development.
- Continue to engage near-term acquisition programs to support JMEM production at system IOC.
- Continue to work National Disclosure Policy issues relative to JMEM product release for foreign customers and coalition operations.
- Develop the target geometry model (TGM), generate vulnerability data, and produce JMEM data for high-priority Combatant Command targets (e.g., surface mobile/fixed, air, hard/deeply buried and ship targets).
- Refresh/update existing TGM, generate vulnerability data, and produce JMEM data for high-priority Combatant Command targets.
- Continue to review and approve tri-Service target surrogation techniques/methodologies to meet JMEM requirements.
- Enhance collateral damage and above/below ground hardened target to include MOUT structure.
- Implement a capabilities based JMEM, accounting for newly fielded systems employing other than traditional kinetic damage mechanisms.
- Advance efforts to provide connectivity to real time planning systems assessing time sensitive targets.
- Conduct on-site JMEM training to Service/Joint course instructors/trainers.
- Continue to monitor technical and funding execution on all FY 2007 projects. Implement performance measures on all FY 2007 JTCG/ME projects based on the delivery of the final product.

JASP:

- Complete Impact of Electronic Limiting on Imaging Seeker Countermeasures project.
- Complete MMW Radar Warning Receiver for UAVs project.
- Complete IR Hollow Core Photonic Bandgap Fibers project.
- Complete Rotary Wing BDAR project.
- Complete DBFM/WINFIRE enhancements. Continue SURVIAC M&S Accreditation support.
- Continue SURVIAC Model Manage support.
- Continue COVART/FASTGEN CCB support.
- Continue JASP Internet site.
- Continue JCAT efforts.
- Continue Publishing the Aircraft Survivability Magazine.
- Continue JASP SIPRNET site.
- Initiate, continue, and complete other projects as approved for accomplishment by the principal members and OSD.

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T&E Independent Activities:

- Continue analytical support for the Director's role as the principal adviser to the Secretary of Defense and the Under Secretary of Defense for Acquisition, Technology, and Logistics on operational test and evaluation and the principal operational test and evaluation official within the senior management of the Department of Defense.
 - Continue analysis to support promulgation of policies and procedures for the conduct of operational test and evaluation and live fire test and evaluation in the Department of Defense, and analysis relating to the composition of the Major Range and Test Facility Base.
 - Continue analysis to support the provision of guidance to, and consultation with, senior Department of Defense officials with respect to operational test and evaluation resources and facilities in the Department.
 - Continue analysis to support review and recommendations to the Secretary of Defense on all budgetary and financial matters relating to operational test and evaluation, including operational test facilities and equipment.
- Continue analysis to support statutory annual reporting to the Secretary of Defense and the Congress on operational test and evaluation, including comments and recommendations on resources and facilities available for operational test and evaluation and levels of funding made available for operational test and evaluation activities.
- Continue analysis to support compliance with requests from Congress for information relating to operational test and evaluation in the Department of Defense.
- Continued analysis to support the Director's operational test resource requirements for the statutory biennial strategic plan reflecting the needs of the Department with respect to T&E facilities and resources.
- Administrative Support:
 - Procure administrative support to carry out oversight of DOT&E programs.
- Accounting and Financial Management Support:
 - Provide accounting and financial management support to the DOT&E.

Exhibit R-2, RDT&E Budget Item Justification

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B. (U) PROGRAM CHANGE SUMMARY

(\$ in Millions)	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
FY 2005 President's Budget	104.381	112.679	114.748	117.325
FY 2006 president's Budget	103.712	107.701	114.190	116.672
Total Adjustments	(0.669)	(4.978)	(0.558)	(0.653)
Congressional program reductions		(3.178)		
Congressional rescissions				
Congressional increases				
Fiscal guidance adjustment			(0.558)	(0.653)
Inflation adjustment				
Reprogramming	(0.669) ¹	(1.800) ¹		

Notes:

1. Reprogramming from PE 0605804D to PE 0605118D.

C. (U) OTHER PROGRAM FUNDING SUMMARY NA

D. (U) ACQUISITION STRATEGY NA

E. (U) PERFORMANCE METRICS

Percentage of required products, such as test planning documents, munitions effectiveness manuals, tactics-techniques-procedures, threat characteristics, assessments, and reports that are developed and delivered to program managers and customers on time.

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OFFICE OF THE SECRETARY OF DEFENSE

OPERATIONAL TEST AND EVALUATION, DEFENSE (0460)

SUMMARY OF FY 2006 BUDGET ESTIMATES
(In Millions of Dollars)

Appropriation Account Title	Direct Budget Plan (TOA)				Budget Authority				Outlays			
CIS Account Title	FY 2004 <u>Actual</u>	FY 2005 <u>Estimate</u>	FY 2006 <u>Estimate</u>	FY 2007 <u>Estimate</u>	FY 2004 <u>Actual</u>	FY 2005 <u>Estimate</u>	FY 2006 <u>Estimate</u>	FY 2007 <u>Estimate</u>	FY 2004 <u>Actual</u>	FY 2005 <u>Estimate</u>	FY 2006 <u>Estimate</u>	FY 2007 <u>Estimate</u>
RDT&E (DoD): 0460	302.080	310.499	168.458	174.736	302.080	310.499	168.458	174.736	304.979	309.940	178.401	174.296

Operational Test and Evaluation, Defense

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OFFICE OF THE SECRETARY OF DEFENSE

OPERATIONAL TEST AND EVALUATION, DEFENSE (0460)

ADVISORY AND ASSISTANCE SERVICES

(Dollars In Thousands)

OPERATIONAL TEST AND EVALUATION, DEFENSE APPROPRIATION (0460)	FY 2004 <u>Actuals</u>	FY 2005 <u>Estimate</u>	FY 2006 <u>Estimate*</u>	FY 2007 <u>Estimate*</u>
I. Management & Professional Support Services				
FFRDC Work	0	0	0	0
Non-FFRDC Work	3,949	2,915	2,448	2,494
Subtotal	3,949	2,915	2,448	2,494
II. Studies, Analysis & Evaluations				
FFRDC Work	6,854	7,553	4,896	4,994
Non-FFRDC Work	0	0	0	0
Subtotal	6,854	7,553	4,896	4,994
III. Engineering & Technical Services				
FFRDC Work	24,355	24,412	25,045	25,511
Non-FFRDC Work	9,969	10,503	8,109	8,196
Subtotal	34,324	34,915	33,154	33,707
TOTAL				
FFRDC Work	31,209	31,965	29,941	30,505
Non-FFRDC Work	13,918	13,418	10,557	10,690

Explanation of Funding Changes:

***The National Defense Authorization Act of 2003 directed the establishment of the Defense Test Resource Management Center (DTRMC). The Act also requires the DTRMC to administer the Central Test and Evaluation Investment Program (CTEIP) and the Test and Evaluation/Science and Technology (T&E/S&T) program effective Fiscal Year 2006. Beginning with FY 2006, program elements 0603941D8Z (T&E/S&T) and 0604940D8Z (CTEIP) are transferred from the Operational Test and Evaluation, Defense (OT&E, D) appropriation (0460) to the Defense-wide RDT&E (0400) appropriation.**

Exhibit PB-15, Advisory and Assistance Services
(Exhibit PB-15, Page 1 of 1)

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OFFICE OF THE SECRETARY OF DEFENSE

OPERATIONAL TEST AND EVALUATION, DEFENSE (0460)

COMPETITIVE SOURCING AND ALTERNATIVES

Negative Report

Exhibit PB-42, Competitive Sourcing and Alternatives
(Exhibit PB-42, Page 1 of 1)

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OFFICE OF THE SECRETARY OF DEFENSE

OPERATIONAL TEST AND EVALUATION, DEFENSE (0460)

Document Declassification
FY 2006 President's Budget
(Dollars in Thousands)

Appropriation	FY2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate
0460	0	0	0	0
Total	0	0	0	0